DE BOW'S
SOUTHERN AND WESTERN
REVIEW.
ESTABLISHED JANUARY 1, 1846.
APRIL, 1852.

VOL. XII., O. S.] ENLARGED SERIES. [VOL. II., No. 4.

ART. I.—COTTON AND COTTON MANUFACTURES.

"First with nice eye emerging Naiads cull
From leathery pods the vegetable wool:
With wiry teeth revolving cards release
The tangled knots, and smooth the ravel'd fleece:
Next comes the iron hand with fingers fine,
Combs the wide card, and forms the eternal line;
Slow, with soft lips, the whirling can acquires
The tender skeins, and wraps in rising spires;
With quickened pace successive rollers move,
And these retain, and those extend the rove;
Then fly the spokes, the rapid axles glow,
While slowly circumvolves the laboring wheel below."

[*Darwin.*

It seems to be with historians as with mankind in general: they pay more attention to the vices, follies, foibles, and even the crimes of men, than to those things which constitute the elements of human happiness and human progress in civilization. This observation is verified by the fact, that most, if not all of the histories that have, until our own day, been written, are nothing more than elaborate recitals of the murderous exploits of military heroes; of the long and bloody wars that nations have carried on against one another; and of the intrigues, crimes, cruelties, vices and follies in which kings, queens, princes and wicked men and women have been engaged.

It is not until the present age, that history has begun to be written aright. It is not until now that historians have begun to discover that the real history of the world consists, not so much in an account of the wars and revolutions of nations, as in that of those products of the earth, and of those of man's ingenuity, which constitute the wealth of nations, determine their social condition and character, and shape their institutions and laws. The legitimate objects of the historian, are those things which build up a nation, and not those which pull it down; but unfortunately for the world at the present day, historians have ever fallen into the common error, by which

the most important matters have been made to give place in their pages to the worst excrescences on the face of humanity.

If historians had taken half the pains to transmit to us knowledge of the state of the moral, intellectual, social and industrial condition of nations, that they have to convey to us accounts of the individual histories of wicked ambitious kings, and their bloody and devastating wars, and disgusting intrigues and crimes, the world would now be, probably, much farther advanced in civilization than it is. They have copied, for the edification of the world, all its past vices, crimes and follies, as fools copy those of the great about them; but they have left in utter obscurity and confusion all that was worth transmitting to posterity. It is easy enough to find out from historians what wars certain nations carried on, at the expense of the lives of millions, and what horrible crimes their kings and ministers committed; but we look in vain in them for any precise knowledge of the arts, sciences, and the industrial pursuits of any nation. If they mention these things, it is only by mere accident.

From this absence in historians of all systematic notice of the scientific, artistic, and industrial character of nations, men have been led to suppose that there was but little science or art among the ancients; while the more recent discoveries of our own times go to show that they had, even as far back as the ages of Homer and of Menes, carried many useful arts to a very high stage of perfection. We are now quite certain that the Egyptians, and probably the Ninevites and Babylonians, four thousand years ago, were skilful workmen, and carried on to a great extent many of those pursuits which, at the present day, constitute our most lucrative branches of industry. No thanks, though, to historians, save those who chose to write in hieroglyphics upon the gigantic temples and monuments that once adorned the valley of the Nile. What the pens of historians might so easily have transmitted to us, we have had to gather from the buried ruins of Nineveh and Egypt. From these, we have acquired more knowledge of ancient art than all that ancient chroniclers afford.

The scientific and industrial history of the world is at once the most important and interesting; but it is yet only written in part. A complete history of arts and manufactures, down to the present day, would be a vast undertaking, and would require, besides high descriptive powers in the historian, the highest order of scientific attainments.

In this paper we propose simply to sketch, as briefly as possible, the history of *cotton and its manufactures* from the earliest times to the present day. Of all the products of the earth there are few, or none, perhaps, that have exerted so powerful an influence on nations as *cotton*. Its history, therefore, cannot but be interesting and important; but unfortunately, although it can boast of high antiquity, we have only the meagre and careless traces of it for its early history, that are to be found amid the rubbish of ancient literature. Such, however, as these meagre traces are, we will endeavor to develop.

That the ancients were well acquainted with cotton, and used it extensively, cannot be disputed. Theophrastus, the Greek philosopher of Lesbos, wrote a work on botany, entitled Περὶ Φυτῶν Ἱστορίας, "On the History of Plants," in which he speaks of τα δενδρα εριοφορα, the wool-bearing plants—*the cotton plants*. Herodotus also speaks of ἔρια τα ἀπὸ ξύλου, which evidently means cotton. He is speaking of India, and the whole passage reads as follows: "The wild trees in that country bear fleeces as their fruit, surpassing those of sheep in beauty and excellence; and the Indians use cloth made from these trees. (Book 3, ch. 106.) Also in chapter 47 of the same book he says, that the thorax or cuirass sent by Amasis, King of Egypt, to Sparta, was "adorned with gold, and with *fleeces from trees*." What, however, Herodotus says of India, could not be from his own personal observation, since he did not, probably, extend his travels farther eastward than Susa, on the banks of the Choaspes. It is barely possible, too, that the cotton alluded to in the last quotation from that author, was only the down of the *bombax** *ceiba*, a tree allied to the cotton plant.

The testimony of Theophrastus, the pupil of Aristotle, leaves no room for doubt. The expedition of Alexander the Great into India, furnished Aristotle and the Greeks with much exact knowledge of that distant region. The entire passage in Theophrastus reads as follows: "The trees from which the Indians make cloths have a leaf like that of the black mulberry, but the whole plant resembles the dog-rose. They set them in the plains arranged in rows, so as to look like vines at a distance." (Theoph. Hist. Pl. ch. 4.) In another part of his work on botany, he speaks of the growth of cotton in India, Arabia, and in the Isle of Tylos, in the Persian Gulf. Speaking of this island, he says: "The wool-bearing trees, (δενδρα εριοφορα,) which grew abundantly in this island, had a leaf like that of the vine, but smaller. They bore no fruit; but the capsule containing the wool was, when closed, about the size of a quince; when ripe, it expanded so as to emit the wool, which was woven into cloths, either cheap, or of great value." This is evidently an attempt to describe the true cotton plant, the *Gossypium Herbaceum*. Theophrastus wrote about 350 years before Christ.

Aristobulus, one of Alexander's generals, made mention of the cotton plant, as Strabo informs us, under the name of the *wool-bear-*

---

* A genus containing many species of very large trees, whose capsules are filled with a fine cottony substance enveloping the seeds. It gives its name to the natural order, *Bombaceæ*, allied to the orders malvaceæ and sterculiaceæ, to the former of which the true *gossypium* belongs. The Bombax is associated with the celebrated Baobab, or Monkey's-bread, of Senegal, (Adansonia digitala,) some of the trunks of which are from sixty to eighty feet in circumference, and with many other of the gigantic tropical trees. The bombax trees are remarkable for forming on their sides huge buttresses, projecting so far from the parent trunk as to be capable of screening many men. The quantity of cotton yielded by these trees is enormous, and often covers the earth around the roots to the depth of several feet; it is unfortunately of too short a staple to be used for manufacturing purposes.

ing tree; and stated that its capsule contained seeds, which were taken out, and that what remained was combed like wool."—(*Strabo*, lib. xv. ch. 1.)

The testimony of Nearchus, also another of Alexander's generals, who, on his return from India, sailed down the Indus, and along the coasts of Persia, to the Tigris, is preserved by Arrianus and Strabo. Arrianus quotes him as saying: "That there were in India trees bearing, as it were, flocks or bunches of wool; that the natives made linen garments of it, wearing a shirt which reached to the middle of the leg, a sheet folded about the shoulders, and a turban rolled round the head; and that the linen made by them from this substance was finer and whiter than any other." (*Arriani, Rer. Ind.*) Arrian flourished in the second century. In the above passage from Arrianus, that author uses the term for linen in a general sense, as including all fine light cloths made of vegetable substances.

Strabo speaks of the printed cotton robes used in India, commending them for the variety of their beautiful hues. He also alludes to the cultivation of the cotton plant, and the manufacture of cotton fabrics, in the Persian province of Susiana. What he says, though, regarding cotton, is on the authority of Nearchus. Strabo was contemporary with Christ.

Ctesias, who was contemporary with Herodotus, seems also to have known the fact of the use of a kind of wool, the product of trees, for spinning and weaving among the natives of India. He lived in the time of Cyrus, and assisted at the battle of Cunaxa, B. C. 401; but it is not known precisely whether he was in the army of Cyrus, or in that of Artaxerxes. He lived many years at Susa, and wrote a history of Assyria, Persia, and India, of which fragments only remain. Servius, quoting Ctesias, says: "*Ctesias ait in India, esse arbores, quæ lanam ferant.*"

Pomponius Mela, also, in his account of India, says that the woods produced wool, used by the natives for clothing. He also distinctly mentions flax, in opposition to cotton, as being a product of India.

Pliny, who flourished about fifty years after Strabo, gives us a more detailed description of the cotton plant in Egypt than any previous writer, which renders it surprising that no trace of cotton cloth has been found on any of the mummies hitherto unrolled. Pliny's account is as follows: "In upper Egypt,* on the side of Arabia, grows a shrub which some called gossypium, others, xylon, from which cloths are made called xylina. The plant is small, and produces a fruit like a walnut, covered with a woolly substance, within which is a soft, silky wool, that is spun into thread. The cloths made of this substance are superior to all others in whiteness and softness. Of these cloths the robes most acceptable to the Egyptian priests were made."

---

* Superior pars Ægypti in Arabiam vergens gignit fruticem, quem aliqui gossypium vocant, plures xylon, et ideo lina inde facta xylina. Parvus est similen que barbatæ nucis defert fructum, cujus ex interiore bombyce lanugo nitet. Nec ulla sunt eis candore mollitiare preferenda. Vestes inde sacerdotibus Ægypti gratissimæ.—*Plinius*, lib. xix. c. 1.

Pliny mentions cotton in four different passages of his Natural History, as abounding in Egypt and in India. He confirms the statement above quoted from Theophrastus, regarding cotton in the isle of Tylos, in the Persian Gulf, and says that there was another island in the same gulf, about ten miles from the former, called the smaller Tylos, which was still more fertile in cotton.

The proper oriental term for cotton was *carpas*, whence the term *carbasus*, used by so many authors for cotton. Cotton was known to the Greeks and Romans much earlier than silk, We might cite a great number of authors who speak of cotton under the name of *carbasus*. Commentators think that the term λινον, or *linum*, was sometimes used to signify cotton. Such is the interpretation which they give to Quintus Curtius, when, in speaking of the Indians, he says, "*Terra lini ferax, unde plerisque sunt vestes.*" In another passage, however, he speaks definitely of both cotton and linen: "Corpora usque pedes *carbaso* velant, soleis pedes, capita *linteis* vinciunt."

The earliest author using the oriental name of cotton was Stalius Cæcilius. He has the following line:

Carbasina, molochina, ampelina,

which, as the words are all Greek, are supposed to be taken from some Greek comedy. Commentators infer from this line, that the Greeks made use of muslins or calicoes, or at least of cotton cloths of some kind, which were brought from India as early as 200 years B. C.

In a work entitled *Periplus Maris Erythrei*, supposed to have been written a little before the time of Pliny, by an Egyptian Greek, named *Arrian*, who went on a mercantile expedition down the Red Sea, and along the whole extent of the coasts of India, he tells us that the Arabian trading vessels brought India cottons to a port in the Red Sea, called Aduli; and that the port of Barygaza, now Baroche, near the north-western coast of India, was a mart of cotton goods of many kinds, whence common cottons, calicoes and muslins, plain and flowered, of Indian manufacture, were exported to various countries. It appears, moreover, that Masalia, in India, now called Masulipatam, was then famous for its cotton fabrics. Bengal muslins were then celebrated among the Greeks, under the name of *gangitiki*, because they were made near the banks of the Ganges.

The oriental custom of using cotton cloths as a protection from the sun's rays, was adopted by the Romans, cotton being not only more common and cheaper than silk, but better adapted for this purpose from its lightness, beauty and fineness. It is supposed, by some learned commentators, that the "white, green and blue hangings," mentioned in the book of Esther, chaps. 1, 6, as adorning the court of the royal palace at Susa, on the occasion of the great feast given by Ahasuerus, were of cotton. Cotton, though cheaper than silk in ancient times, must have been very costly; for Cicero, in enumerating the expensive novelties which contributed to the luxury of Verres, when prætor in Sicily, charges him with using "tents with coverings of cotton"—"*tabernacula carbaseis intenta velis*—as something very

extravagant. At a later period, according to Pliny,* Lentulus Spinther first introduced cotton awnings at Rome, in the theatre at the Apollinarian games, in the year 63, B. C. Afterwards, Julius Cæsar covered with awnings the whole Roman forum, and the Via Sacra, from his own house to the ascent of the Capitoline Hill. Marcellus, the ædile, nephew of Augustus, also covered the whole forum with awnings, to protect from the sun the lawyers and others engaged in law-suits. Lucretius alludes to the cotton awnings, thus:

> Carbasus ut quondam magnis intenta theatris
> Dat crepitum, malos inter jactata trabeisque.

The poets of the Augustan age, and many subsequent writers, make frequent mention of cotton. The wars against Mithridates and the Parthians, in the first century before Christ, contributed to make the Romans more familiar with cotton and its use, although their chief supply was through Egypt, more than through Persia and Babylonia.

Apuleius mentions *carbasina* in connection with *bombycina* and other kinds of cloth, meaning to designate calico or muslin.

The best account, probably, that has been given of cotton by any ancient writer, is that of Julius Pollux, who wrote about a hundred years after Pliny. He says:

"There is also Byssina, and Byssus, a kind of flax. But, among the Indians, and now also among the Egyptians, a sort of wool is obtained from a tree. The cloth made from this wool may be compared to linen, except that it is thicker. The tree produces a fruit most nearly resembling a walnut, but three cleft. After the outer covering, which is like a walnut, has divided and become dry, the substance resembling wool is extracted, and is used in the manufacture of cloth for woof, the warp being linen."

Theophilus Presbyter, who wrote about the year 800, A. D., describes the use of cotton paper for making gold leaf. He calls it "*parcamena Græca, quæ fit ex lana ligni*"—Greek parchment made of tree-wool.

We might quote Catullus, Tibullus, and Propertius; and Virgil speaks of cotton five times incidentally in his works; and also add a host of other quotations from a great number of ancient writers, to show that cotton was well known to antiquity; but this will suffice. Those whom we have omitted only allude to cotton incidentally, and often in a manner that leaves one in doubt as to the exact use they intended to make of the terms denoting cotton.

From the travels of the two Arabians who visited China in the ninth century, we learn that, at that time, the ordinary dress of their countrymen was cotton; for they remark, that "the Chinese dress not in cotton, *as the Arabians do*, but in silk." From this, we may infer that cotton was in general use in most of the countries of Western Asia.

---

* Pliny, lib. xix. c. 6.

The question, so long agitated by the learned, whether cotton was or was not cultivated in Egypt in ancient times, seems to be put to rest by the discoveries of the microscope. Until this instrument was brought to bear upon the subject, the greatest division and uncertainty prevailed among all. The great difficulty was to determine whether the cloths in which the mummies were wrapped were of linen or cotton. All chemical tests failed.

The character of the wrappings of the mummies, that for more than two thousand years had been accumulating in the catacombs of Egypt, was never questioned until about one hundred years ago. All writers, until then, believed those wrappings to be, as they certainly are, purely of linen. But, in the year 1750, M. Rouelle wrote a dissertation on mummies, which was published in the *Memoires de l'Academie Royale des Sciences,* in which he asserted that the cloth of every mummy which he had examined, even that of the embalmed birds, was *cotton.* This began the discussion, which lasted until the year 1834. Some of the most eminent and learned antiquarians adhered to the opinion of Rouelle; and, indeed, he appears to have been generally followed. Some writers advanced the opinion, that the mummy cloths were a mixture of cotton and linen. Such was that of M. Jomard, one of the authors of the great French work on Egypt, entitled, *Description de l'Egypte.* He founded this opinion partly on the touch and appearance of the cloths, and partly on the testimony of Herodotus, who says distinctly, in his description of the mode of making mummies, that the embalmed body was enveloped in cotton. (Lib. 2, ch. 86.) Herodotus calls the mummy cloth σινδὼν βύσσινος, which may be translated cotton muslin. It is possible that Herodotus was correct; for, although all mummy cloths now in existence are found, by microscopic observation, to be pure linen, some mummies that have not been discovered, or that have long since perished, may have been, in the time of Herodotus, wrapped in cotton. That writer certainly knew what cotton was; for in the extracts from him, which we have given, he accurately describes it.

M. Costaz, who contributed, to the same work on Egypt, the Memoir on the Grotto of El Kab, asserts that mummy cloths were cotton. Dr. Granville, in the Philosophical Transactions for 1825, in describing a mummy which he opened, says: "I have satisfied myself that both cotton and linen have been employed in the preparation of our mummy, although Herodotus mentions only cotton, (byssus,) as the material used for the purpose."

The question, however, was settled by Mr. Bauer and Dr. Ure. The microscope revealed to them a very remarkable and striking difference between the structure and appearance of the ultimate fibres of our modern cotton and those of flax. They found the ultimate fibre of cotton to be a transparent tube, flattened, so that its inward surface is in contact along its axis, and also twisted spirally around it; while that of flax is a transparent tube, *jointed like a cane,* and neither flattened nor spirally twisted. Applying these microscopic results to some 400 specimens of genuine mummy cloth,

they were all found to be linen. Mr. Wilkinson, in his *Manners and Customs of the Ancient Egyptians*, considers the observations of Dr. Ure and Mr. Bauer as decisive of the question. Their microscopic observations, too, have proved, that the ancient Egyptians made a general application of linen to all the purposes of ordinary life, since the mummy wrappings consist partly of old linen shirts, napkins, and other articles of clothing and domestic furniture.

A vast deal of time and learning has been expended on the question regarding the character of the cloths enveloping the Egyptian mummies; but, as an ingenious writer observes, the microscope has reduced all this learned labor of so many writers "*to the character of old lumber.*" There is, doubtless, a vast deal more of this "old lumber" in the world, which some future microscope is destined to sweep away.

In allusions by Greek and Roman writers, to cotton fabrics, they are mentioned as expensive and curious productions, rather than as articles of common use. Cotton, among the ancients, must have been far more expensive than linen. It would appear, from all evidence which the Egyptians themselves have afforded us, that they were quite unacquainted with cotton; for it is found on none of their mummies; and, besides, there are no paintings of the cotton shrub on any of the Egyptian ruins. On the other hand, we find upon the tombs of Thebes accurate representations of flax in all its different states of growth and manufacture; also, in the grotto of El Kab. (See Description de l'Egypte, and Hamilton's Ægyptiaca.) Linen was, in fact, the staple article of clothing among all classes of the Egyptians, from the laborer to the monarch and the priest. From them, the Jews first, and afterwards the Greeks and Romans, learned its manufacture.

It is very remarkable, that the proximity of the Syrians and Egyptians to those regions where the cotton plant was indigenous, did not lead them to the use of it, the product of which would have furnished them with an article of clothing so much cheaper than flax. Cotton had been manufactured into clothing, and had come into general use in India, many centuries before it began to be used in the west, by the natives about the Mediterranean; and the general use of cotton in India, and its value as an article of clothing, must have been known to the Greeks and Romans, for they were constantly visiting the East, whence they carried away precious stones, silks and spices. We can only ascribe the indifference of the Greeks and Romans to the cotton plant and its fabrics, to their well-known indifference to the arts which contribute to personal comfort. War was the great business of their lives, the all-engrossing subject, the only pursuit thought worthy of a free citizen.

In Cicero's time the mechanical arts, in the Roman empire, were exercised entirely by slaves. In several of the states of Greece the free citizens were prohibited from exercising any mechanic art, because the labor of the mechanic was considered "hurtful to the strength and agility of the human body, rendering it incapable of those habits which their military and gymnastic exercises required, and thus disqualifying it for undergoing the fatigues and encounter-

ing the dangers of war." Such occupations were therefore considered fit only for slaves.

For the same reasons the Greeks discouraged commerce. Many of the states actually prohibited foreign trade altogether. Even in those places where foreign commerce, and the exercise of the mechanic arts, were not prohibited, as at Rome and at Athens, the great mass of the people were, in effect, excluded from all the trades and occupations which are, at the present day, exercised by the lower classes. They were carried on by the slaves of the rich for the benefit of their masters, whose immense wealth, power and protection, rendered it impossible for the poor man to find a market for his work, coming, as it did, in competition with that of the slaves of the rich. This state of things also accounts for the utter absence of all progress in inventions of a labor-saving character; for the Greek or Roman slave had no inducement to exercise what inventive genius he might chance to possess. Should a slave propose an improvement, his Roman master, often more ignorant than the slave himself, looked upon it as a suggestion of laziness, and as a desire of the slave to save his own labor at the master's expense. Hence all inventions or improvements were the work of freemen.

The finer sort of manufactures, among the Greeks and Romans, was excessively dear; nor did a reduction of price begin to take place until after the discovery of the route to India by the way of the Cape of Good Hope. Cotton, indeed, continued to be more costly than linen, until long after the discovery of America. The high price of linens and woolens, among the Greeks and Romans, accounts for the total absence among them of that great but fickle goddess of modern times—*Fashion*. They had gods and goddesses for everything else. Their dress was seldom varied, as is proved by the costumes of the antique statues. A change of costume was too expensive, and their dresses were loose and flowing, so as to last for a long time. It must be admitted, however, that in proportion to the influence which fashion exercises in any country may its claim to civilization be vindicated, nothing being so characteristic of a rude and barbarous state of existence, as a rigid adherence to the customs of antiquity.

India produces several varieties of cotton, both of the herbaceous and of the tree kinds. Marco Polo, who wrote in the 13th century, says "that cotton is produced in Guzerat in large quantities from a tree about six yards high, which continues to bear for twenty years; but that the cotton taken from trees of that age is not adapted to spinning, but only to quilting. That taken from trees twelve years old is suitable for muslins and other manufactures of extraordinary fineness." Sir John Mandeville, who traveled in the fourteenth century, fifty years later than Polo, mentions the annual herbaceous cotton as cultivated in India. "In many places," says he, "the seed of the cotton (cothon) which we call tree-wood, is sown every year, and there springs up from it copses of low shrubs on which this wool grows."

Forbes, in his Oriental Memoirs, thus describes the herbaceous cotton of Guzerat: "The cotton shrub, which grows to the height of three or four feet, and in verdure resembles the currant-bush, requires a longer time than rice to arrive at perfection. The shrubs are planted between the rows of rice. Soon after the rice is harvested, the cotton shrubs put forth a beautiful yellow flower, with a crimson eye in each petal. This is succeeded by a green pod, filled with a white, stringy pulp. The pod turns brown and hard as it ripens, and then separates into two or three divisions containing the cotton."

Malte Brun speaks of cotton in India thus: "The cotton tree grows on all the Indian mountains, but its produce is coarse in quality. The herbaceous cotton prospers chiefly in Bengal, and on the Coromandel coast, and there the best cotton goods are manufactured. The cultivation of this plant is very lucrative, an acre producing about nine quintals of cotton in the year."

When Columbus discovered America, cotton was the chief article of clothing among the Mexicans. The Abbe Clavigero says, that "of cotton the Mexicans made large webs, and as delicate and fine as those of Holland, which were so highly esteemed in Europe. They wove their cloths of different figures and colors, representing different animals and flowers. Of feathers interwoven with cotton they made mantles, bed-curtains, carpets, gowns, and other things not less soft than beautiful. With cotton also they interwove the finest hair of the belly of rabbits and hares, after having spun it into thread; of this they made most beautiful cloths, and in particular, winter waistcoats for their lords." Cortes, the conqueror of Mexico, sent as presents to Charles V., says Clavigero, "cotton mantles, some white, others mixed with white and black, or red, green, yellow, and blue; waistcoats, handkerchiefs, counterpanes, tapestries, and carpets of cotton; and the colors of the cotton were extremely fine." Cochineal and indigo being native products of Mexico, they were well supplied with dyeing materials; but the fact of their having carried the arts of manufacturing and dyeing cotton to such a high stage of perfection, is proof that they must have received their knowledge from India, by way of the west.

Columbus also found the cotton plant growing wild and in great abundance in the West India islands, and on the continent of South America, where the inhabitants were found dressed in cotton, and using fish-nets of the same material. They also used it for beds. They had probably used cotton for ages.

As we find no traces in any of the Greek and Roman writers of the culture of cotton in any of the countries bordering on the Mediterranean, until after the Mohammedans had extended their conquests westward, we may infer that Europe is indebted to them for this branch of agriculture. They seem to have carried it into Greece, Syria, Italy, Spain, Sicily, and into every country on the Mediterranean.

The explorations of modern travelers show that the cotton plant is indigenous to Africa, and that in almost every region of that por-

tion of the globe the inhabitants of every class use it as raiment. The Portuguese made a voyage to South Africa in 1516, and found the Caffres then wearing cotton dresses. According to Macpherson's "Annals," cotton cloth, woven on the coast of Guinea, was imported into England in 1590. The colors and designs observed on the cotton dresses of the Africans prove that the manufacture is of high antiquity.

It does not appear that cotton began to be cultivated in the fields in China as an article of manufacture until the 11th century, though it was cultivated by the Chinese in their gardens for its flowers as early as the end of the 7th century. "The whole town is full of cotton flowers," says a Chinese poet of that time, in some lines written on summer.

How so ingenious a people as the Chinese could have known so long the product of the cotton plant and its uses, without making it an article of manufacture, it is difficult to imagine. Indeed, coercion seems to have been necessary before they could be persuaded to undertake its culture. It was not until the dynasty of the Mogul Tartars, who conquered China in 1280, and held it for 88 years, that cotton began to be cultivated largely. The emperors of that dynasty compelled its extensive cultivation, by imposing an annual tribute of cotton on several of the great provinces. The Chinese objected to its cultivation, on the ground that it interfered with their corn, forest trees, and the manufacture of silk; but their prejudices were finally overcome by the liberality and care of the Tartar emperors, and all of the provinces engaged in its cultivation.

In consequence of a great dearth of provisions in China about a hundred years ago, an imperial mandate was issued, ordering a considerable portion of the cotton lands to be used for corn; and since that time the Chinese have imported large quantities of cotton.

We have shown in the preceding pages, that from a very remote period the natives of all the tropical countries of Asia, Africa and America, were well acquainted with the cotton plant; and that in India, some parts of Africa, and in Mexico and South America, it had at that period become a common article of clothing. We now proceed to the second branch of our subject, in which we propose to sketch, as briefly as possible, from the earliest period to the present day, the

History of Cotton Manufactures.—We have the authority of the Sacred Scriptures for saying, that fig leaves formed the first clothing used by man; that skins of beasts probably came next, and after these probably cotton, wool and silk, in the order in which we here give them. Whether cotton, wool or silk, was the first natural product manufactured into clothing, is a question which has not been much discussed, and one, too, which it would be difficult to answer. The earliest historical records throw but little light on the subject. According to the most learned commentators, it cannot be fully determined whether silk is ever mentioned in the Old Testament. It is true that the word *silk* is found in King James' transla-

tion, but it is quite unauthorized. The meaning of the Hebrew word, translated *silk* in the common English Bible, and τρίχαπτον in the Septuagint version, cannot be determined, for τρίχαπτον is in reality as obscure as the Hebrew word itself. Jerome could not make out its meaning, and concluded that the word was invented by the translators. It is found nowhere out of the Septuagint except in a passage of Pherecrates, a comic poet of Athens, contemporary with Plato and Aristophanes. Braunius, in his *De vestitu Heb. Sacerdotum*, gives the whole question a full examination, and decides that there is no mention of silk in the whole of the Old Testament, and that it was unknown to the Hebrews in ancient times.

Whether cotton was used before wool, depends, we conceive, much upon the question regarding the situation of the Garden of Eden; but this question cannot be determined. If the first inhabitants of the earth dwelt in a region producing cotton as a spontaneous production, it is probable that cotton was the first article manufactured into clothing after leaves and skins; but if the locality of Eden lay in any other region, wool was probably the article used first.

So far as all existing historical records aid us in determining the question, we think that the weight of evidence is in favor of cotton as the first manufactured article of clothing. We know that cotton was an article of clothing in common use in India in very remote ages, and that the Indians had brought its manufacture to a very high stage of perfection at a period when neither Egypt nor any of the western nations had any knowledge of its growth or manufacture. Growing, too, as it did, spontaneously, it would naturally present itself as the easiest article for manufacture that could be found. Men would hardly go to the greater trouble of raising sheep for their wool, when the earth presented them, everywhere, with the beautiful pods of silky cotton.

Undoubtedly the inventive faculty of man began to exhibit itself at a very early period; but the insect world taught man the art of weaving. The *spider*, says an ingenious and learned author, "may be regarded as the earliest practical *weaver* on record;" and he might have said *spinner;* while the much despised *wasp* may claim the honor of being the first *paper* manufacturer, since it produces an undoubted specimen of paper in the material of its nests, of so smooth and hard a surface, as to admit of being written upon with ease and legibility.

The antiquity of the manufacture of cotton cannot be reached by any authentic records. Neither wool, silk, nor linen, can claim a higher antiquity. One thing is pretty certain, that its first manufacture may be traced to India, whence it passed to all the rest of the world. India, indeed, has been the source of many of the arts of civilized life. It was, in all probability, the cradle of mankind, and the source of Assyrian, Egyptian and Persian civilization.

The Indians have, in all ages, maintained an unapproached and almost incredible perfection in their fabrics of cotton. Indeed, some of their muslins might be thought the work of fairies or insects, rather

than of man; but these are produced in small quantities, and have seldom been exported. In the same province of India from which the ancient Greeks obtained the finest muslins then known, namely, Bengal, these astonishing fabrics are manufactured at the present day.*

We are told by two Mohammedan travelers, who went to India in the 9th century, "that in that country they make garments of such extraordinary perfection, that nowhere else are the like to be seen. They are woven to that degree of fineness that they may be drawn through a ring of moderate size." Marco Polo, in the 13th century, mentions Coromandel, and especially Masulipatam, as producing "the finest and most beautiful cottons that are to be found in any part of the world;" and this is still the case as to the flowered and glazed cottons, called chintzes.

The Portuguese adventurers who went to India immediately after the discovery of the route by the Cape of Good Hope, speak of "the great quantities of cotton cloths admirably painted, also some white and some striped, held in the highest estimation, which were made in Bengal." Cæsar Frederick, a Venetian merchant, who traveled in India in 1563, describes the extensive trade carried on between St. Thomé (a port 150 miles from Negapatam) and Pegu, in *bumbast* (cotton) cloth of every sort, painted, which is a rare thing, because this kind of cloths show as if they were gilded with divers colors, and the more they are washed the livelier the colors will become; and there is made such account of this kind of cloth, that a small bale of it will cost 1000 or 2000 ducats."†

Tavernier, who traveled in India about 200 years ago, speaks of the white calicoes (so called from the city of *Calicut*, in India, where they were first seen by Europeans) or muslins woven in Bengal, and rendered so remarkably white by being dipped in lemon juice. He says, "Some calicuts are so fine that you can hardly feel them in your hand, and the thread when spun is scarcely discernible." The same writer says, that "there is made at Seconge, in the province of Malwa, a sort of calicut so fine, that when a man puts it on, his skin shall appear as plainly through it as if he was quite naked; but the merchants are not permitted to transport it, for the Governor is obliged to send it all to the Great Mogul's seraglio and the principal lords of the court, to make the sultanesses and noblemen's wives shifts and garments for the hot weather; and the king and the lords take great pleasure to behold them in these, and see them dance with nothing else upon them." Speaking of the turbans of the Mohammedan Indians, Tavernier says: "The rich have them of so fine cloth, that twenty-five or thirty ells of it, put into a turban, will not weigh four ounces."

Eighteen hundred years ago, according to Arrian, author of the Periplus, there were thousands of men, women and children employed at Baroche, in Guzerat, and the adjacent villages, in the manufacture

* Baine's Hist. of the Cotton Manufacture, p. 55.
† Hakluyt's Voyages, vol. ii, p. 366.

of cotton, from the coarsest sail-cloth to the finest muslins. So that it is a great mistake to suppose that cotton manufactories are of modern origin. They existed in India centuries before the Christian era.

The ingenuity of the Hindoo cotton manufacturers is truly wonderful. The late Rev. William Ward, a missionary at Serampore, says: that "At two places in Bengal, muslins are made so exceedingly fine, that four months are required to weave one piece, which sells at five hundred rupees. When this muslin is laid on the grass, and the dew has fallen upon it, it is no longer discernible." We might cite a great number of creditable authorities, in proof of the fineness of India cotton manufactures, and the ingenuity of the Hindoos, but these will suffice. The oriental hyperbole which describes the muslins of Decca as "*webs of woven wind*," is less poetical than is generally supposed. No modern European manufacturer of cotton at all approaches the Hindoos, in respect to the fineness of his fabrics. The extreme of fineness to which yarns for muslins are now spun in Great Britain, is 250 hanks to the pound, though cotton yarn has been spun in England making 350 hanks to the pound. This was, however, only an experiment, to ascertain how fine cotton could be spun. No such yarn is or could be used in making muslins, or for any other purpose. The Hindoos are the only ones who have ever woven such yarn into fabrics.

The cotton manufacture, in India, is not carried on in a few large towns only, or in only one or two districts; it is universal. Almost every village has its weavers. Orme, in his Historical Fragments of the Mogul Empire, says: "At present much the greatest part of the whole provinces are employed in this single manufacture of cotton. The progress of the cotton manufacture in India includes no less than a description of the lives of half the inhabitants of Hindoostan."

Dr. Hamilton, in his Account of Patna, mentions it as a fact, strikingly illustrating the national character of the Hindoos, that "All Indian weavers, who work for the common market, make the woof of one end of the cloth coarser than that of the other, and attempt to sell to the unwary by the fine end, although every one almost who deals with them is perfectly aware of the circumstances; and although in the course of his life any weaver may not ever have an opportunity of gaining by this means, yet he continues the practice, with the hope of being able, at some time or other, to take advantage of the purchaser of his goods."

It is a matter of great surprise that the Hindoos, with such rude materials for manufacturing, should be able to produce fabrics of such exquisite delicacy and beauty, unrivaled by the products of any other nation, even those best skilled in the mechanic arts. This is explained by the remarkably fine sense of touch possessed by the effeminate Hindoos; by their patience and gentleness; and by the hereditary continuance of a particular species of manufacture in families through many generations. It is further observed, that every distinct kind of cloth is the product of a particular district, in which

the fabric has been transmitted perhaps for centuries from father to son.

The commerce of the Hindoos in cotton fabrics has been extensive from the time of Christ to the end of the last century. For many hundreds of years, beginning even farther back than any authentic record carries us, the Hindoos, probably, supplied Persia, Arabia, Syria, Egypt, Abyssinia, and all the eastern parts of Africa, together with Europe, with all their cottons and muslins. The great marts of this commerce were at Surat and Calicut, on the west coast of India, and at Masulipatam, Madras, and St. Thomé, on the east coast.

At one time the manufacturers of all Europe, owing to the beauty and cheapness of India muslins, chintzes, and calicoes, apprehended ruin by their competition. In the seventeenth century the Dutch and English East India Companies imported these goods in large quantities, which importation, in 1678, produced, in England, a loud outcry against the admission of India goods, which, it was maintained, were ruining the woolen manufacture. The interference of cotton with woolen fabrics was greatly dreaded in England. The English regarded the woolen manufacture, for many centuries, with almost superstitious veneration. It was, in fact, the most extensive branch of manufactures in the world, save that of cotton in India, until the commencement of the present century, and the English looked upon it as the palladium of their national prosperity.

The cotton fabrics of India became common in England at the commencement of the eighteenth century, and were complained of as a great evil by a host of pamphleteers. In the year 1700 an act of the British parliament forbade the importation of India silks and printed calicoes for domestic use, either as apparel or furniture, under a penalty of £200 on the wearer or seller. This was done to "avert the ruin of English manufactures, and revive their prosperity."

The manufacture of cotton, as we have seen, was general in India, and had attained high excellence in the age of the first Greek historian, that is, in the fifth century before Christ, at which time it had already existed for an unknown period; yet eighteen centuries more elapsed before it was introduced into Italy or Constantinople, or even into the neighboring empire of China. Though so well suited to hot climates, we have seen that cottons were known rather as a curiosity than as a common article of dress in Egypt and Persia, five centuries after the Greeks had heard of the *δενδρα εριοφορα*, the wool-bearing trees of India. In Egypt, the manufacture never reached any considerable degree of excellence, and the muslins worn by the higher classes have always been imported from India. In Spain, the manufacture, carried thither by the Arabs, flourished for a time, and then became nearly extinct. In Italy, Germany, and Flanders, it maintained only a sickly and ignoble existence.

In the downfall of the Roman Empire the arts and commerce perished. We have at this period only a few incidental notices of the cotton manufacture in the East. Omar, the successor of Mohammed, is described as "preaching in a tattered cotton gown, torn in

twelve places;" and Ali, his fellow fanatic, wore, at his inauguration as Caliph, "a thin cotton gown tied around him with a girdle." Whence, it is inferred, that cotton was a common article of dress, in Arabia, at the time of the Hegira, (A. D. 622,) and had probably been so for many generations.

There is little doubt that the Mohammedans carried along with their conquests into the western world the arts of growing and manufacturing cotton, and that they also introduced into India many improvements in the oriental manufacture of cotton, suggested by their superior intelligence and inventive genius.

In Spain, the cotton manufacture flourished during the thirteenth, fourteenth and fifteenth centuries, and then declined. The cotton plant still grows wild in many parts of Spain. Barcelona was famous for its cotton sail-cloth, large quantities of which it furnished to other nations. The Spanish term *fustaneros*, from which comes our word *fustian*, denotes manufactures of a stout, substantial kind of cotton goods first manufactured in Spain. Cotton *paper* was also probably first made in Europe by the Spanish Arabs, who brought the art from the East, some say Egypt, others Bucharia. The Arabs also manufactured linen paper at Valencia. The religious antipathy, however, which existed between the Moors of Spain and the Christians, prevented the propagation of the oriental arts in the West; and when the Saracens were driven from Spain, the arts which they had brought to that country perished.

The Portuguese were the first to import into Europe the cotton stuffs and muslins of India, but they did not attempt the manufacture of cotton in Portugal. The Dutch, however, not only imported cotton fabrics largely from India, but also, towards the latter end of the sixteenth century, began to manufacture them at home. Long prior to this period a manufacture of indigenous cotton had existed in the southern parts of Italy, where, particularly along the gulf of Taranto, the plant had been cultivated since the eleventh century. In Calabria the plant was biennial. The soil of southern Italy is said to have been very favorable to the culture of cotton.

The manufacture of cotton, in England, did not commence until about the beginning of the sixteenth century. They brought their raw cotton from the Levant, Lisbon, and Sicily. The first cotton manufacturers in England were Protestants from the Low Countries, whither they were driven by the religious persecutions of the court of Spain. They commenced the manufacture at Bolton and Manchester.

The cotton fabrics first manufactured in England were partly of linen, owing to the scarcity of cotton. It was not until 1773 that fabrics purely of cotton began to be made in England. These were produced by Messrs. Strull and Need, the partners of the illustrious Arkwright; but no sooner were they produced, than it was discovered that a law existed, expressly *for the encouragement of the arts*, prohibiting the sale of such fabrics. Application was immediately made to the British parliament for the repeal of so unwise a law, but it required much time and expense to convince that legislative body of

the propriety of repealing so preposterous an enactment. This it finally did, on condition, however, that three pence a square yard should be paid by the manufacturers on all printed cottons or calicoes.

Men have often complained, that the world has been cursed by physic and false medical philosophy; but it may well be questioned, whether society has not suffered much more from the operations of *stupid laws*; for what step forward has civilization ever made, that has not found a stumbling-block in some stupid enactment, if not in some entire code of laws? Commerce and manufactures especially have suffered, and still continue to suffer by bad laws.

In modern times, cotton has attained to an importance among the vegetable productions of the earth, which could not have been even dreamed of a few centuries ago. The manufacture of cotton, though it now affords employment and subsistence to hundreds of thousands of persons, is almost wholly a consequence of discoveries and inventions, made in England and in this country, since the middle of the last century. Previous to that time the manufacture was confined to the narrowest limits. Owing to the difficulty of separating the wool from the seed, its price, so long as this operation had to be performed by the hand, was necessarily high; while the cost of its spinning and weaving by the wheels and looms in use previous to 1760, added so much to its price, that cotton articles were suited only to the use and demand of the higher classes of society.

It is a very remarkable fact, that no material improvements in the art of manufacturing cotton fabrics took place, during the long period from the earliest historical dates down to the middle of the last century. The Hindoo, at the present day, uses the same rude and simple implements in manufacturing his fabrics, that were used when Herodotus wrote. All the great improvements in the art of manufacturing cotton and woolen were reserved for the present age.

The first great improvement was the invention of the spinning-jenny, by Hargreaves, in 1767, by which one individual could spin 120 threads at once, or, in other words, perform, in any given length of time, the work of 120 persons! Previous to this invention, every thread used in the manufacture of cotton, wool, and flax, throughout the world, was spun singly by the fingers of the spinner, with the aid of that rude, antique, and classical instrument, the domestic *spinning-wheel*. The jenny of Hargreaves, however, was fit to spin only the softer descriptions of yarn, or that used as *weft*, it being unable to give the thread the firmness and hardness required for *warp*. Two years afterwards, this deficiency was removed by the genius of Arkwright, who completed what Hargreaves had begun, by inventing the *spinning frame*—a wonderful piece of machinery, which spins any number of threads, of any degree of fineness and hardness, leaving to the hand of the operator merely the feeding of the machine with cotton, and joining the threads when they happen to break.

Five years later, in 1774, the genius of Compton conceived the happy idea of combining in one machine the inventions of Hargreaves and Arkwright, thus erecting an instrument turning one hundred

spindles at once—hundred-handed, like Briareus and his giant brothers of old.

At first this astonishing invention was turned by hand, and Kelly was the first to apply to it the waters of the Clyde. Watt next applied the more potent agency of steam, thus causing two thousand spindles to whirl at once in a single machine.

But the spinning machinery awaited another improvement. By an ingenious contrivance, Roberts succeeded in rendering the hand even of the spinner unnecessary, the machine doing the entire work unaided. Now, in our cotton factories may be seen several thousand spindles, in a single apartment, revolving with inconceivable rapidity, with no hand to urge their progress or guide their operations—drawing out, twisting, and winding up, as many thousand threads, with unfailing precision and indefatigable patience and strength—a scene as magical to the unfamiliarized eye, as the transformations of oriental tales.

Nearly at the same time that the spinning department was thus wonderfully improved, Dr. Cartwright, a clergyman of Kent, England, invented the *power-loom*. But there was still another thing necessary to complete this astonishing career of discovery. Without a vastly increased supply of the raw material, and at a much lower price than it had previously brought, the inventions of Hargreaves, Arkwright, Compton, Roberts and Watt, would have been of comparatively little value. This last, and, perhaps, the most important step of all, was the work of an American. Mr. Eli Whitney, a native of Connecticut, by the invention of the *cotton-gin*, conferred upon the world a machine which has done more for cotton growers, manufacturers, commerce and civilization, than any other one machine that was ever invented. Without the cotton-gin, all the inventions for spinning would be comparatively useless, and even the steam-engine itself would be stripped of half its value, as a manufacturing engine. Where would now be all our immense exports of raw cotton, all the vast cotton manufacturing establishments of the world, and all the vast commerce of nations in cotton fabrics, if we had not the cotton-gin of our illustrious countryman, Eli Whitney? We often talk of erecting monuments to perpetuate the memory of our great statesmen and our literary men; but certainly Eli Whitney deserves a monument whose top would overlook the whole cotton region of North America; and such a monument should be erected by the cotton planters of the southern states.

Previous to 1790, the United States did not export a single pound of raw cotton. In 1792, we exported the trifling quantity of 138,328 lbs. Whitney's invention came into operation in 1793; and in 1794 we exported 1,601,760 lbs; and in 1795, 5,276,306 lbs. And so astonishing has been the growth of cotton since the invention of the cotton-gin, and occasioned by it, that in 1838 the United States exported 595,952,297 lbs. Our immense exports since that year need not be given.

A cotton mill is probably, all things considered, the most astonishing triumph of skill and ingenuity; all the various operations, from

the carding of the cotton to its conversion into a texture as fine almost as that of the gossamer, being performed by machinery. Each of the workmen at present employed in a cotton mill, superintends as much work as could have been executed by two or three hundred workmen sixty or seventy years ago; and yet, instead of the number of workmen being diminished by machinery, it has been vastly increased. It would be curious to investigate how many persons in the world depend directly for subsistence on the inventions and discoveries of Hargreaves, Arkwright, Watt, Whitney, and other founders and improvers of this great manufacture. They certainly amount to several millions; at the same time that there is hardly an individual on the face of the globe, who is not indebted to them for an increase of comfort and enjoyment. It is impossible to estimate the advantage to the great bulk of mankind arising from the wonderful cheapness of cotton goods. The humblest classes have now the means of dressing as elegantly as did the highest fifty years ago; and the humblest peasant's cottage may now have as handsome furniture for beds, windows, tables, &c., as the house of the rich man half a century ago.

The following table will show the early progress of the cotton manufacture in Great Britain prior to the invention of the spinning-jenny by Hargreaves:

Years.	Raw Cotton Imported.	Value of Goods Exported.	Years.	Raw Cotton Imported.	Value of Goods Exported.
1697	1,976,359 lbs	£5,915	1730	1,545,472 lbs	£13,524
1701	1,985,868	23,253	1741	1,645,031	20,709
1710	715,008	5,698	1751	2,976,610	45,986
1720	1,972,805	16,200	1764	3,870,392	200,354

The spinning-jenny of Hargreaves went into operation in 1767; and Arkwright's improvement was patented and put in operation in 1769. The influence of these, and other inventions and improvements made afterwards, on the manufacture and trade, may be seen by inspecting the following table:

Years.	Cotton Imported.	Cotton Exported.	Years.	Cotton Imported.	Cotton Exported.
1781	5,198,778 lbs	96,788 lbs.	1810	132,488,935 lbs	8,787,109 lbs.
1785	18,400,384	407,496	1811	91,576,535	1,266,867
1790	31,447,605	844,154	1812	63,025,936	1,440,912
1795	26,401,340	1,193,737	1813	50,966,000	—
1800	56,010,732	4,416,610	1814	60,060,239	6,282,437
1805	59,682,406	804,243	1815	99,306,343	6,780,392

The importations of cotton into England, from all sources, since 1816, have been as follows, according to the statement of Messrs. Geo. Holt & Co., cotton brokers at Liverpool:

1816	93,000,000 lbs.	1838	501,000,000 lbs.
1820	143,000,000	1839	388,000,000
1825	222,000,000	1840	583,000,000
1830	261,000,000	1845	721,979,953
1835	361,000,000	1850-'51	800,000,000
1837	408,000,000		

The best portion of the cotton imported into England comes from the United States; the balance from Brazil, Turkey, Egypt, and the British East and West India possessions. England takes the lead of

all other nations in manufactures, particularly of cotton. It is estimated that the number of persons employed in this manufacture in Great Britain is not far from 2,000,000. Estimating the state of the cotton manufacture by the number of spindles employed, it stands nearly as follows, at the present time, in the various manufacturing countries of the world:

Great Britain	17,500,000 spindles.	Switzerland	650,000 spindles.
France	4,300,000 "	Belgium	420,000 "
United States	2,500,000 "	Spain	300,000 "
Germany	815,000 "	Italy	300,000 "
Russia	700,000 "		

Manchester, or rather Lancashire, is the grand seat of the English cotton manufacture; and next to it Cheshire, Nottinghamshire, the West Riding of Yorkshire, and Cumberland, are its principal seats. Glasgow and its vicinity is the seat of the manufacture in Scotland, and Belfast in Ireland, where it is said to be on the decline.

The value of the cotton manufacture of Great Britain is greater, estimating from the last table of spindles above, than that of all the rest of the world besides. It is difficult to give an accurate estimate of the annual total value of the cotton manufacture of Great Britain. Mr. McCulloch, in his *Commercial Dictionary*, estimates it at about £34,000,000, or $164,560,000. This estimate is considered by Mr. Baines, in his elaborate work on the Cotton Manufacture, as too small.

It would be a pleasant task to trace the history of cotton manufactures in France, Germany, Holland, Russia, and other countries of Europe; but as that would extend this paper much beyond the limits we designed for it, we shall conclude with a brief history of the manufacture of cotton in the United States.

The first cotton-mill of the United States was erected in Pawtucket, Rhode Island, by the late Mr. Samuel Slater, a native of Belper, Derbyshire, England, in 1790. The machinery was that of the Arkwright patent. There is evidence that Hargreave's jennies were in use in this country previous to 1790, but by whom, and when introduced, is not known. They were worked principally by Scotch and Irish weavers, who produced mixed goods of linen and cotton. Great Britain, at that time, used every means to prevent the introduction of her spinning machinery into other countries. Her law expressly forbade its exportation; and every attempt to import the machinery into America had failed. The Hon. Tench Coxe, of Philadelphia, entered into a bond with a person, who engaged to send him, from London, complete brass models of Arkwright's patents. The machinery was completed and packed, but was detected by the examining officer, and forfeited, according to the existing laws of Great Britain. No way remained to obtain the benefit of the British inventions but to manufacture them on our own soil. For this purpose, Mr. Slater came to America. He had been a pupil of Arkwright, and was perfectly familiar with all his patents. He brought with him neither patterns nor memoranda to assist him in his work, but depended entirely on his memory, a thing that the

statutes of Great Britain could not reach. The King of England had frequently made proclamations against any tradesman leaving the kingdom, and had called on his officers for their most vigilant watch against it;* but the professions of men leaving the kingdom could not be always detected.

Some of the first yarn made by Mr. Slater, in America, and some of the first cotton cloth made from it, was sent to the Secretary of the Treasury, on the 15th of October, 1791; and it is probably in existence now. It is stated† that Mr. Clay had some of the first yarn in his possession, in 1836. It was as fine as number 40.

Mr. Slater was induced to leave his employment under Arkwright, in England, to come to America, by seeing a premium offered by the Pennsylvania Society for a certain machine to spin cotton.

Mr. Slater labored under the greatest disadvantages for the want of suitable materials, and mechanics of sufficient ingenuity to assist him. The history of his first labors is deeply interesting, for the details of which we must refer the reader to his biographer. His first machine was what is called a water-frame of only twenty-four spindles. Such was the humble origin of cotton manufacturing in America. From that first machine the advancement of the cotton manufacture has been truly astonishing. It has caused hundreds of populous villages, towns, and even cities, to spring up, as if by magic, where only a few years ago nothing was seen but a barren wilderness.‡

The rapid growth of the cotton manufacture in this country, is unparalleled in the history of industry. The second cotton-mill in America was erected in 1795, at the same place as the first. No more were built until 1803, when a third was erected in Massachusetts, followed by a fourth, in 1804. During the three following years ten more mills were erected in Rhode Island, and one in Connecticut, making in all fifteen mills with 8,000 spindles, producing 300,000 pounds of yarn annually. By a report made to the government in 1810, it appears that eighty-seven additional mills had been erected by the end of 1809, of which sixty-two were then in opera-

* Life of Samuel Slater, by G. S. White, p. 88. † Idem, p. 89.

‡ Astonishing as has been the increase of the various manufacturing towns and villages in the United States, *Lowell*, in Massachusetts, surpasses every thing of the kind that has been witnessed within the memory of man. In 1819 its site was a wilderness, whither sportsmen went to shoot game. The entire population of the territory around it did not exceed 200 souls. It was a poor, barren district, with but a few houses on the spot where the city now stands; and the inhabitants supported themselves principally by fishing in the Concord and Merrimack rivers, at the junction of which Lowell is situated. A company of wealthy men in Boston, seeing the valuable water privileges of the spot, purchased it for manufacturing purposes. The first cotton-mill was erected there in 1822; and in 1830, the population of the place had increased to 6,477 persons. In 1840, the population had become 20,796; and the value of property there was $12,400,000. In 1844, the population was 25,000. It is now 35,000. Thus, what only thirty years ago was a wild pasture-ground, has become a large and flourishing city: a proof of what water-power, seconded by capital and enterprise, can do for a place. Lowell is a splendid example of an American manufacturing city, and excites the attention, and, in some measure, the jealousy, says McCulloch, of Manchester and Glasgow. We need no better proof of what manufactures can accomplish than the history of Lowell. The Lowell cotton-mills, owned by twelve manufacturing companies, extend in a continuous line of about a mile, from the Merrimack to the Pawtucket Falls.

tion by horse and water-power, running 31,000 spindles. The cotton manufacture continued to spread, and received a considerable impulse from the war of 1812. In that year there were in Rhode Island thirty-three cotton factories, with 30,663 spindles. In Massachusetts there were twenty mills, with 17,371 spindles.

A report made to Congress, in 1816, gives the following statement of the consumption of cotton by our mills, showing how rapidly the cotton manufacture had advanced. The consumption of cotton was, in

1800	500 bales.
1805	1000 "
1810	10,000 "
1815	90,000 "

The following statement is also officially made in the same report, showing the state of the cotton manufacture at that time:

Capital employed in 1816,	$40,000,000
Males employed over 17 years old	10,000
Women and female children	66,000
Boys under 17 years	24,000
Cotton cloth manufactured	81,000,000 yards.
Cost of same	$24,000,000
Raw cotton, 90,000 bales, or	27,000,000 lbs.

The subject of protection was then extensively agitated. The importations of cotton goods, in 1815, and 1816, were immense, and created great alarm among manufacturers. The amount of importations of those two years was about $180,000,000. During the years 1817, 1818, 1819, and 1820, great distress prevailed among the manufacturers, but Congress was not disposed to grant their petitions in full.

Tariff laws were passed in 1824, 1828, and 1832, in each of which the duty upon foreign cotton goods, imported, was 25 per cent. *ad valorem*. These duties, though they did not prevent our markets from being glutted with foreign goods, caused our manufactures to gradually increase.

In 1820, the first cotton mill in Pennsylvania was erected at Manayunk, by Capt. John Towers. There were then only two small cottages on the spot. It now contains 500 dwellings, 5 churches, 15 stores, and about 30 mills.

Amongst the numerous towns that have sprung into existence, owing to the influence of manufactures, may be mentioned—Waltham, Patterson, Ware, Fall River, Taunton, Pawtucket, Lawrence, Adams, Newmarket, Matteawan, Norristown, Pa., and Gloucester, N. J.

In 1840, there were in the United States about 1025 cotton mills, with about 2,112,000 spindles. These mills were distributed as follows:

In Massachusetts	310	Rhode Island	130
New-Hampshire	70	Connecticut	120
Vermont	30	New-York	120

Pennsylvania	80	Ohio	10
New-Jersey	55	Virginia	10
Delaware	17	Kentucky	10
Maryland	30		

Many of these were small establishments, with not more than 1000 spindles; there were, also, at that time, numerous small factories in the Western and Southern States, not included in the above statement. In 1840, the

Cotton used annually in our mills, was	106,000,000 lbs.
Capital invested, was	$80,000,000
Annual value of cotton manufacture	60,000,000

In the same year there were in operation, in the New-England states, 1,590,140 cotton spindles. The whole number of spindles in the United States, in 1850, was 2,500,000, showing an increase of 20 per cent. in the last ten years.

Of the present actual condition of the cotton manufacture in this country, we cannot speak with entire certainty, until the returns of the census, for 1850, are published. We are deficient in details, but for the figures given above, derived chiefly from a work on American cotton manufactures, by Robt. H. Baird, 1851, we can speak with confidence.

Of the 2,500,000 cotton spindles now in the United States, 150,000 are in the Southern states, and 100,000 in the Western. A committee of the Manufacturers' Convention, held last year at Richmond, Va., stated, in their report, that there were 20 companies engaged in the manufacture of cotton in that state, with an aggregate capital of $1,800,000. These companies run, when in full operation, 54,000 spindles, producing no yarn, however, finer than No. 20. For some time past, these Virginia mills have had in full operation 22,000 spindles, at a reduction of 25 per cent. on the wages; 7,000 spindles three-fourths of the time, and 8,000 one-third of the time. The remainder of the factories are entirely, or partially, stopped.* In Maryland, affairs are not much better than in Virginia. "Out of 28 mills in that state," says Mr. Baird, "only two are constantly employed; 18 work a part of the time, and eight are entirely idle. The total average product is less than half the capacity of the mills. In Rhode Island, too, we learn from a writer in the Scientific American, for Dec. 7, 1850, some 70, out of the 130 cotton mills in that state, have stopped.

These suspensions and depressions of our cotton manufacturing operations are undoubtedly attributable to the following causes combined:

1. Our present low tariff.
2. The high price of cotton; and
3. Our manufacturing too many coarse goods. Which of these causes is the most potent, we leave our readers to decide. The first we cannot discuss without being drawn into the field of politics. The second affects manufacturers by turning capital into other channels;

* Baird's Cotton Spinner, p. 25.

and the third by overstocking the markets with coarse goods, and leaving our citizens dependent on other countries for fine ones. If we would keep the fine goods of other countries out of our markets, we must manufacture that description of goods at home. Nothing but an absolute prohibition of the fine cotton fabrics of other countries would keep them out of our markets, if we did not manufacture them ourselves. If our manufacturers do not supply the demand for fine fabrics, they must and will come from abroad. The real truth of the matter is: England manufactures large quantities of coarse cottons, and our manufacturers make scarcely anything else but coarse; and the consequence is, that the present supply of coarse fabrics is greater than the demand—the markets are glutted. Mills, then, are obliged to stop. We consider this the chief cause of the failures. The other causes mentioned have their weight.

The process of calico printing by machinery is the last invention, and the crowning one, in the manufacture of cotton. Before the introduction of calico printing, the cotton manufacture in the United States was considered to be too precarious to justify one in an attempt to manufacture the finer fabrics; but the introduction of calico printing has placed our cotton manufactures on a permanent basis. Our consumption of domestic calicoes is immense, and all our coarser cotton fabrics have the preference in the markets of South America, China, Siam, the East Indies, and elsewhere, on account of their being superior in durability to those of France and England.

The comparative idleness of our cotton factories is to be deplored; but the general government cannot justly be charged with the present state of things, and it is at least questionable whether the evils complained of can be removed by legislation. To succeed, it is evident that our cotton factories must manufacture those fabrics most in demand. If, after glutting the markets with coarse fabrics, they still continue to manufacture them, they must expect to fail, and no legislation could help them. Undoubtedly a higher tariff would help them some, but it would not obviate the necessity of manufacturers adapting their fabrics to the demand and supply of the various markets.

Our cotton manufacturers are at present much affected by the importations of foreign cottons. The value of cotton goods imported into this country, after deducting the amount re-exported, was, in

1844.....	$13,286,830	1848.....	$17,205,417
1845.....	13,360,729	1849.....	15,182,518
1846.....	12,857,422	1850.....	19,685,986

During the year 1850, the value of the cotton goods exported from this country was $4,734,424.

It is a curious fact in the history of the agricultural products of the earth, that cotton, which now yields to this country a profit of from $30 to $40,000,000 annually, was almost a worthless plant only sixty-six years ago. Mr. T. Coxe, a writer in Rees' Encyclopædia, says, that in 1786 cotton was only seen growing in gardens in this country. Cotton crops and cotton planters, at that time, were quite

unknown. Not a single bale of cotton was exported from this country before 1787, that is, of this country's growth. We find in Smither's History of Liverpool, pages 129, 153, an account of the first exportations of cotton from this country, as follows:

1770.....	3 bales	from New-York.
"	4 bags	" Virginia.
"	3 barrels	" North-Carolina.
1784.....	8 bales	" "America."
1785.....	5 "	" "
1786.....	6 "	" "

All of this cotton was from the Spanish Main, or the West Indies. The eight bales marked "America," on arriving in England, were seized, it being presumed that so large a quantity of cotton could not come from America. It would seem that as late as 1794, Mr. Jay, when making the treaty with England at that time, was not aware that any cotton was exported from the United States.* The first export of our own cotton, according to M'Culloch, was in 1790. It was in small packages, called "pockets."

The prices of cotton at first were very high. In England, in 1789, it was 22 pence per pound. In America it was as follows:

1790.....	14½ cents.	1796.....	36½ cents.	1802.....	19 cents.
1791.....	26 "	1797.....	34 "	1803.....	19 "
1792.....	29 "	1798.....	39 "	1804.....	20 "
1793.....	32 "	1799.....	44 "	1805.....	23 "
1794.....	33 "	1800.....	28 "	1806.....	22 "
1795.....	36½ "	1801.....	44 "	1807.....	21½ "

From 1807 cotton declined until 1814, when it was 15 cents; 1815, 21; 1816, 29½; 1817, 26½; 1818, 34. It then declined to 15 cents in 1824, and in 1825 rose to 21 cents. It then declined to 9½ cents in 1827, and was not over 10½ until 1833, when it became 11; 1834, 13; and in 1835, 16½.

The United States export more raw cotton than all the rest of the world. For the last five years our exports have been as follows:

1846.....	$42,787,341
1847.....	53,415,848
1848.....	61,898,294
1849.....	66,596,887
1850.....	71,984,616
1851.....	over 100,000,000†

Europe paid the United States, in 1850, the enormous sum of $71,984,616, besides what she paid to other cotton-growing nations. Our home consumption is, at present, 539,000 bales; that of England, 1,472,000; that of France, 363,000. All the rest of Europe together consume about as much as France. England, therefore, uses up more than one-half of all the cotton raised on the earth; but all the people of Great Britain and her dependencies do not use as many manufactured cotton goods as the people of the United States. Our home consumption exceeds that of all Europe.

* Letter of the Secretary of the Treasury, Document No. 146, p. 33.
† We have not yet the Secretary's return—shall hereafter give it.

ART. II.—THE STRAITS SETTLEMENTS, AND THE INDIAN ARCHIPELAGO,

PRINCE OF WALES ISLAND—MALACCA—SINGAPORE—CULTIVATION OF RICE IN INDIA, &C.

By the term "Straits Settlements," is understood all that part of the Hon. East India Company's possessions situated in various unconnected spots, within the area of lat. 1° 17′ to 5° 25′ north, and 100° 25′ to 104° east long., Greenwich. These settlements embrace the island of Pulo Pinang, known also as Prince of Wales Island, together with its adjacent territory of Province Wellesley, Malacca, and, lastly, the Island of Singapore. Each of these Anglo-Indian possessions is under the administration of three resident councilors, having, as superior, a "Governor of the Straits Settlements." All these appointments, as well as many of the inferior posts, have hitherto been subject to the control of the Bengal supreme government; but new arrangements are announced in the English papers.

These colonies differ slightly in climate, but all are more or less adapted to the purposes of intertropical agriculture. Hurricanes are unknown; and though occasionally strong squalls may visit those localities, the harm they do seldom extends to more than shaking off the fruit from the trees, and breaking down some tender saplings. These lands owe the exuberant vegetation which covers them to the humidity of the climate throughout. Rains likewise fall more or less copiously at intervals. Thus the "oldest inhabitant" informs us, that at Pulo Pinang rain fell almost every day betwixt October, 1789, and June, 1790; whilst from the government statistics it appears that rain fell for 145 days between May, 1833, and April, 1834, inclusive; the pluviameter marking it as follows during the last named period:—

	in. 10ths.
Pinang Flagstaff hill,.....	116·6
" Plain,.....	65·5
Province Wellesley,.....	79·1½

The mean temperature during the 24 hours is 80½ Fahr.

The soil of Pinang and Singapore consists for the most part of decomposed granite. The alluvial soil, owing to the absence of large streams, is almost entirely confined to some tracts of low-lying rice grounds.

In Province Wellesley the soil is by no means uniform in quality. The coast line exhibits a narrow sandy belt of low land to the northward and eastward, while to the southward the arable and habitable tracts are hemmed in, excepting at a few points, by broad mud flats, covered with mangrove trees, and which are flooded by tides at high-water. Beyond the Sandy Belt and Mangrove Jungle, are extensive

alluvial tracts under rice cultivation, alternating with ridges of light soil running parallel to the coast. These ridges, in the centre of the province, and towards the Siamese frontier, give place to irregular shaped dry alluvial plains, stretching north and south. A few hills of moderate elevation are scattered throughout this district. The soil of the alluvial plains and rice grounds is superior in fertility to lands of the same class in Pinang or Singapore. Extensive roads have been, and continue to be, still made in Province Wellesley, to facilitate intercourse, and three large rivers, besides numerous creeks, afford ready access to many parts of the country. The government laborers are *convicts*, the "Straits Settlements" being now-a-days the penal colonies for the Hindostanic empire. Dry waste lands, fit for plantations in these localities, may be obtained from the government on leases of forty years' tenure, at a quit rent, varying according to locality, but not on the average exceeding 90 cents for every 1⅓ acre, or two rupees per orlong.

The island of Pinang contains about 85,000 acres, one-fourth of which may be said to be under cultivation. In 1836, exclusive of the church and public buildings, the value of real estate within the precincts of Pinang town was estimated at $800,000. It has more than doubled in value since. The value of the extensive nutmeg plantations in these spots of the Anglo-Indian possessions cannot easily be estimated.

There is a good main road stretching from one end of Pulo Pinang to the other, and intersecting the cultivated tracts, besides which there are numerous coast roads. Province Wellesley, like most young countries, has its inconveniences. Among these may be enumerated musquitoes and tigers. These denizens of the forest very naturally follow agricultural man, since besides being enabled, each in their way, to discuss the merits of Chinamen's legs, they can easily help themselves to his cattle, poultry and dogs. The tiger makes "*small bones*" about walking off with a grunter or two; and it is very laughable to behold the expression of mute indignation on the visage of a Chinese farmer, when he discovers of a morning the terror-striking footprints around his piggery. During my numerous peregrinations in the Malayan jungles, I have repeatedly heard tigers on the move within 50 yards; but, owing to the denseness of the undergrowth, I never had the satisfaction of meeting with them but once, and that was in hunting with a friend, when a tiger broke cover close to us, and was at once presented with a couple of probably innocuous rifle shots. Trapping tigers is a highly profitable vocation of the natives, for, apart from the bounty paid for each head by the authorities, the whole body, together with the offal, is saleable to the Chinese doctors at 40 cents a pound. Tiger's meat, &c., enters largely into the Chinese Pharmacopœia, as an infallible recipe to make a Chinaman *brave*. Whether its effects are such upon Chinese or other races, deponent knoweth not.

Strangers visiting Pulo Pinang and Malacca, have to depend at first more upon private hospitality than on the accommodation in taverns. In the "Straits Settlements," moderately-sized houses

are to be hired unfurnished at ten to thirty dollars per month. Provisions are cheap. The furniture necessary to fit up a bachelor establishment ought not to exceed $150; and $39 are sufficient to pay the wages for a servant, cook, butler, groom, and washer*man* per mensem. In most celibatory establishments there is, nevertheless, what is called a "Noonah" female housekeeper. The sights in Pinang are but few. There is the Flagstaff hill, from which a most magnificent view can be obtained of the opposite coast of the Malayan Peninsula, with its massive chains of mountains in the distant background. Here, amid the mists of an elevation of 2,200 feet, and in a temperature often as low as 65°, the Anglo-Indian convalescent renovates his constitution, if not so far shaken as to require a more bracing air. The rose, and other flowers of northern climes, here also remind him of European scenes, whilst the beautiful fir tree of this region serves to aid the illusion. The geologist will not find much to interest him, unless he penetrates the Peninsula; but the botanist will be puzzled where to commence his investigations in the ample field spread out before him. The zoologist will not want employment; but the conchologist, in addition to the rarest shells, will more than probably catch the—jungle fever.

It was in Pinang that I first tasted the celebrated Doorian, (Durio Zebethinus,) so quaintly described, if my memory serves, by Dampier, "as the deliciously stinking Doorian." Fancy a fruit about the size of a large green cocoa-nut, containing twelve to fifteen seeds as big as a chestnut, and covered with a whitish creamy pulp. Imagine that your olfactory nerves are suddenly offended on opening it, as if with exhalations from putrescent animal matter, seasoned with a strong dash of assafœtida. Such is the Doorian's *smell* to the beginner. But the taste! no combination of vanilla, ice-cream, guavas, strawberries and every thing else that in fruit is accounted delicious, will bear comparison with the Doorian. It is the prince—no, the *emperor* of fruits! Talk of nectar and ambrosia! I would willingly walk an entire day to partake of what is styled a Doorian feast; and the Malay who earns his pittance of $5 per month, frequently expends a dollar upon Doorians, when they first come into market, notwithstanding that he may be forced to economize during ten days in consequence of his gormandizing and extravagance. This fruit is considered highly aphrodisiac, and as such is used to a large extent by the Mohammedan rulers about the Archipelago.

Malacca, owing to the superior capabilities of Singapore as regards anchorage, has sadly fallen off from her pristine greatness, when under the Portuguese and Dutch rule. Tin is found there in large quantities, and gold has also been worked to advantage. To end their days, and be buried in their beloved Malacca, is the aspiration of a large class of the Straits' inhabitants; I mean of what are equivocally called native-born Chinese, who descend from emigrants and are born under the English rule. They dislike returning to the land of their forefathers, for fear that the Mandarins should "makee too muchee squeezee my;" which in plain English signifies, that the Mandarins or magistrates, as the term implies in Portuguese, on

becoming aware of the return of a wealthy Chinaman, should mulct him, by threats of imprisonment, or severer penalties, for imaginary misconduct.

In Malacca, spices and cocoa-nuts are cultivated largely, but the growth of rice forms the chief agricultural pursuit of the natives, to be detailed further on.

To the profound wisdom and liberal policy of the lamented Sir Stamford Raffles, does the British nation owe its flourishing colony of Singapore. Sir S. Raffles, contrary to the exclusive system of his government, made the port of Singapore free from the expense of harbor dues and the vexatious imposts of customs. Enormous have been the advantages that have accrued to this petty isle, hardly fifteen miles in diameter, in consequence of those free trade measures. Another cause of prosperity arises from its unique geographical position, placed as it is on the high road of vessels from America and Europe to China, almost within speaking distance of Hindoostan. The present great intercourse with the whole of the Indian Archipelago will receive, in about a year's time from now, unprecedented impetus from bi-monthly steam communication with New-Holland and Australia. Some thirty years ago, a few miserable fishing huts were all that was to be seen where now are visible rich and splendid buildings, gardens, and plantations; whilst from a population of a few hundred Malays, it has increased at the present day to upwards of 70,000 prosperous settlers of all nations. The amount of tonnage that arrived at Singapore during the years 1819–20, was but 49,000 tons; and during the official year of 1849–50, the government reports have swelled to 270,931 tons. In 1823–24, the value of cotton piece goods imported was estimated at $692,496—and of woolens, $45,000. In 1849–50, these two articles had increased, the first up to $1,435,790, and the second to $136,533, owing to the enormous increase of the Chinese population alone. In Singapore the local authorities, in 1847, disposed of their opium farm, for one year's license, at the extraordinary price of $146,643.

There are several large and comfortable hotels at this port, together with an infinitude of boarding-houses. The place supports also a small but neat theatre, a race-course, and several handsome places of worship, including the Hindoo pagodas, Chinese joss-houses, and Moslem mosques. An Episcopal church there has undergone strange mutations. Destined in the first instance for a theatre and assembly room, some of the more seriously disposed Scotch subscribers metamorphosed the building into a Presbyterian meeting-house. During a pastoral visit of the Lord Bishop of Calcutta, it was suggested that in presenting their edifice to the E. I. Co., the communicants would be able to save the expense of a clergyman, inasmuch as the government, so this knowing Churchman discoursed, would provide an expounder free of cost; but the wary bishop had never indicated that the clerical incumbent was to belong exclusively to the Church of England: so that when the subscribers, for parsimony's sake, made over the building, they found themselves in a fool's paradise.

Besides some 2,000 Hindostanee convicts from all parts of Asia,

Singapore, from the very central position it occupies in the Indian seas, furnishes more extensive varieties of the "genus homo" than any other point of the globe. Leaving aside the aboriginal inhabitants of the Peninsula, one encounters Chinamen, Burmese, Siamese, Tonquinese, Cochin-chinese, many of the Polynesian races, and numerous members of most of European and African peoples.

The Chinese number on the island about 45,000. They consist of those born on the island as well as of some from the Hoke-in province, whilst others are Tio-chin and Khé. Amongst themselves they distinguish each other under the following designations: Su, those whose profession is to teach, the literati in fact; Long, the husbandmen; Kong, mechanics; and Siang, merchants and shopkeepers.

During the prevalence of the north-east monsoon, each year brings from the Celestial Empire some ten thousand emigrants to the port of Singapore. In 1847–48, there arrived 108 junks and 11 square-rigged vessels, with 10,475 Chinamen. Few of these emigrants being able to pay their passage money, speculators purchased them at $10 a head for one year's servitude. They are then transshipped to Pinang, Malacca, Borneo, Java, and other parts of the Archipelago, as far down as South Australia. California and Valparaiso have now become ports to receive these "Redemptioners."

From calculations made of the quantity of opium used per annum, which averages 240 chests, there must be at least 15,000 out of the population of 45,000 Chinese at Singapore, who make use of this honesty-corrupting, no less than noctiferous drug. I say corrupting, because opium, being far more seductive than alcoholic drinks, privation from it, through poverty, will lead men to perpetrate heinous offences against society, more readily than ordinary drunkenness.

Assuming this estimate to be correct, there must be, where the population reaches nearly 400 *millions*, at least 3,000,000 opium smokers in the Celestial empire; because, in 1845, 40,000 chests were imported into that vast country. But if, instead of repressing the curse, the Chinese government offered facilities similar to those which opium smokers enjoy at Singapore, under the most Christian rule of H. M. Queen Victoria, there would be above 92 millions of opium smokers in the Chinese dominions. In Java, the Dutch government considers that there are 93,866 opium smokers on the island, or one in every ninety-five persons, out of a population of *nine millions*.

All religious creeds are tolerated in the Straits Settlements. Several Protestant missionaries have been settled there for years. The benefit hitherto accruing to the colony, from their exertions, is discoverable solely in the yearly increase of the juvenile Anglo-Indian inhabitants. Conversions, it need scarcely be observed, are out of the question; but at Singapore, as in many other missionary establishments that I have met with in my Oriental peregrinations, *hopes most sanguine*, of future converts, are expressed in print, as regularly as quarter-day comes round. Far different, however, is the case with the results of the Roman Catholic missionaries, who number in Singapore some 500 converted Chinamen. The Celestials, previ-

ously to being received into the bosom of Mother Church, have to undergo a year's probation, in order that they may wean themselves from opium smoking and gambling. Catholicism, herein, has performed marvels at the colony.

Sporting is much pursued at the Straits, by the Europeans, during the rainy season. Snipe, especially, are very plentiful at Singapore, and I have seen twenty brace bagged in a morning by one gun. On crossing to the main land, teal, gray plover, curlews, red partridge, pheasants, jungle-fowl, &c., are easily met with—elephants, rhinoceroses, tapirs, and wild cattle, are hunted in the Peninsula.

The only description of chase followed at Singapore is deer of three species, tigers, and wild hogs. I have been a participator in the field obsequies of seventy-five wild hogs; of one, the tusks measured eleven inches in length. In hunting large game, the plan usually pursued is to collect about 100 men, (generally convicts,) with about thirty dogs, and station them, in an extended semi-circle, to windward of the spot to be beaten. When the sportsmen have taken their stations to leeward, the beaters, on a given signal, advance; and amid an infernal din of gongs, yells, and fire-crackers, joined to the baying of the dogs, the game is frightened on, to where are concealed the hunters, and falls beneath their rifles.

Fishing throughout the Archipelago is excellent, though often carried on in an unsportsmanlike manner. On the north-west coast of Borneo, after the rice crop is housed, the chiefs generally give a "spree," and it often terminates with the whole population of the place going down to the sea-side on a gigantic fishing excursion. There they collect quantities of a root, called "tubbà," and select the mouth of some small river, not broader than a quarter of a mile, as the spot whereon to commence operations. The tubbà is macerated in a boat, filled up to the gunwale with water, and just as the flood tide is about commencing, the boat is upset, so as to impregnate the water with the tubbà decoction. The effect on the fish is electrical; they are at once intoxicated, bounce out of the water, and become an easy prey to the Bornean spearsmen, who, standing in their light canoes, project the bamboo lances, of twenty feet in length, with most unerring precision. It is capital sport, except to the fish: sometimes very laughable, from the awkward accidents that take place from over-excitement in the chase, such as losing one's equilibrium, and tumbling oneself and lance into the water.

I stated, in a few pages back, that rice was cultivated to some extent in Malacca. The following sketch will explain the usual process of cultivation, together with its accompanying ceremonies, in that particular locality, as well as throughout the Malayan peninsula.

The grain season commences about August, just, in fact, before the north-east monsoon, during which time rain is supposed to be more frequent than during the south-west monsoon. The Malays cultivate two descriptions of rice—*wet rice*, and *dry*, or *upland rice*.

The varieties of wet rice are considerable, and distinguished with great nicety by the Malays. At first a foreigner might be disposed to think these people fanciful in their separations of qualities; but on

narrower inspection, the different kinds of rice are observed to possess distinct features. Sixteen varieties of sawah, or *wet rice*, some five of which are honored with the title of Sri, most excellent, ripen in seven months. Three kinds come to maturity in eight months, and sixteen others in six months. There is also a description of rice, introduced from China, called Panget-so, which ripens in one hundred days. The Malays do not attempt the double cropping in vogue on the continent of India. They have no tanks, and only at a few spots the latter could be made. The Malays are obstinate in asserting that, even were water abundant, the rice sown in their part of the world will not fructify until after the north-east monsoon, or rainy season, has passed. The Malays never manure their rice fields, nor is there any occasion for so doing, the field being allowed to lie fallow from six to eight months in the year. The highest rate of productiveness per one and one-third of an acre, is stated to be 600 gantangs of paddy, equivalent to 783 bushels.

When seed-time arrives, four gantangs* are sown, upon a well-watered and cleared spot of land, of the extent of a sixteenth part of an orlong.† In about forty days the plants attain sufficient growth to admit of their being transplanted to the Bindang, or paddy field. The task of transplanting is commonly performed by the women. Before the seed is sown in the nursery, it is twice measured, in order to ascertain that no grains have *escaped* supernaturally. The Samai or rice plants are pulled up by the roots, in bunches of sufficient size to be easily grasped with one hand—the roots are rapidly cleaned with the other, and the tops cut off. A few of the whitish stalks are then selected, and carried separately to the field Ayer Bedak; a fragrant cosmetic, dissolved in water, is now sprinkled over the ground, in order to propitiate the spirit of the paddy, the Malayan goddess Ceres, for whom the Malays have no distinct appellative, but express their meaning by the words Samangat Paddy, which implies that the spirit of the paddy vanishes through terror, when not conciliated. The spot on the field where such propitiatory evocations are made, is styled Bumi Putra—Prince's Ground. The selected stalks are placed on a rest, along with offerings of dressed eggs, rice, sugar-cane, cocoanuts, and sweetmeats. These offerings are generally left on the spot.

One of the singular customs that may be observed at these settlements, amongst a population composed, as stated before, of various races, is a species of search for Ceres, or Proserpine, by the Chinese. They call it a search for charmed roots and medicinal substances. Four men carry on their shoulders a small painted wooden, or bamboo box, with a canopy, and open in front. In this box is an image of Choo-Sookong, one of their deified mortals. A Tuzzuzen, or physician, heads the procession, and the whole party tread over the fields in double quick time.

---

* A measure containing 256 cubic inches.
† One orlong is equal to one and one-third of an acre.

In planting the rice-seedlings, the husbandman is provided with a short stick, forked at the end. Inserting in the fork from five to nine stalks or plants, he pushes it down into the mud, to the depth of from three to six inches, according to the nature of the soil. Superstition enjoins that extreme decorum should be observed pending the operation, and that no one should speak, during the planting of every seven bunches. These bunches are set at distances, varying from half a foot to one foot and a half apart. In the richest soils, even two feet might be allowed, as the bunches expand sufficiently to cover the intervals. The owner afterwards inspects his field occasionally; sees that it has the requisite quantity of water; at the same time, he destroys weeds and vermin. As the ear begins to fill, he stretches ropes over the field, to which are attached scarecrows; and he erects a high covered perch, wherein one of his family constantly watches, at the risk often of being made a meal of by some prowling tiger. Rats, which occasionally appear in great numbers, contrive to levy heavy on the crop. The water is allowed gradually to drain off, in order to hasten the filling up of the ear. The grain is cut with a sickle, when it has been bent down by its own weight or by the wind.

During harvest, the Malay cultivator is in his glory. Elderly matrons are then seen, with conical straw hats, plucking the ears of corn; the married women, and spinsters of a certain age, are left to the distaff, loom, and other household duties. The Malays hold sacred the first days of harvest, and the presiding spirit is again invoked and propitiated. These days are Pantang, or Tabooed in New-Zealand phraseology, termed Pamali by the Dyaks of Borneo. No person is admitted into the house, nor must any one leave it during that period, but for the purpose of bathing and fetching water. After this is over, an iron nail is carried to the field, to avert some planetary influence. It is there stuck into the earth, and left till the grain is cut. The nail is afterwards placed in the granary, as a charm to prevent the paddy taking fright and vanishing, or becoming Samangat. A rude altar is now erected in the field, on which offerings of fruits and perfumes are laid; a white cloth is thrown over them, and the peasant invokes the Spirit in the following strain:

Marelah Ché, marelah Tuan,
Hundah pulang malegei, mas malegei perak,
Lama suda main ungin dan ombak,
Tumpat iyang sinnang, iyang selesa.

Come, O young Lord and Master,
Return to the gold and silvery palace;
Long hast thou disported in the breeze and rippling waters,
Return now to a place of repose and enjoyment.

The harvest-home is celebrated by games, theatricals, and other festivities, among which is buffalo-fighting; but that combat being disallowed, by law, in the British territories, where it is considered equivalent to bull-baiting, is only witnessed in Malayan lands under

native rule. A Spaniard would think the sport exceedingly tame, no barbarities being practised. The buffaloes are successively led into the arena by pairs, and, when sufficiently close, "come to the scratch" of their own accord. They rarely exceed five minutes in fighting, and never do much harm to each other. The only science displayed by a veteran bull, is to introduce one of his horns under the lower jaw of his adversary, and, by twisting his opponent's neck, bring him on his side to the ground. The defeated buffalo rarely runs a second tilt, but rapidly makes off, without any attempt at pursuit on the part of the victor.

Oomah, or upland rice cultivation, is not a very favorite style of raising rice by the Malays. They have four species of this grain that ripen in 4 months, six in 5, and two in 6 months. On commencing a field, the primitive forest is cut down, and the timber burned. Holes are made in the virgin soil with a sharp stake, and four or five seeds of paddy are dropped in each, but they are not covered with earth. This cultivation is often mixed with Indian corn, gourds and cucumbers. The cost of clearing one acre will be about $12. The land then must lie fallow for a year; when it will again cost about $10 per acre to clear it from the brushwood, which, in that part of our globe, grows with extreme rapidity. Most of the ceremonies incidental to the Sawah cultivation are also used in the Oomah.

The cultivator, during the fallow season, directs his attention to sundry other modes of gain. He may hunt the elephant for his ivory; the rhinoceros, for his horn and hide; or trap the tiger. Should his taste be not so adventurous, he may turn fowler. The catching and preserving the skins, with the feathers on, of the larger kinds of kingfishers, is often a lucrative employment. The skins find a remunerating market in China, where they serve for embroidering dresses. The fowler having caught a burong pukaka, or kingfisher, puts it into a cage furnished with a trap-door, or merely ties it by the leg to a peg. A thin net is suspended over the bird, which soon begins to utter discordant screams; this attracts other kingfishers, and as these successively attack the caged bird, they are entrapped. The fowler, whenever a new bird is caught, substitutes it for the preceding one, because it makes a greater noise.

ART. III.—PHENOMENA OF NATURE.*

The present age of the world is characterized, as the result of its greater advancement in knowledge, rather by a cautiousness and distrust of its intellectual powers, than by that bold presumption and vanity always attendant on ignorance, which so strongly marked the intellect of the ancients. Attempts at generalizations, with a view

* Cosmos: A Sketch of a Physical Description of the Universe. By Alexander Von Humboldt; vol. iii., 1851. Harper & Brothers, New-York.

of arriving at final causes, are, it is true, among the first promptings of the soul, and those promptings the mind can with difficulty resist. Hence the repeated attempts of the ancient philosophers to reduce all the phenomena of the universe to one principle of explanation; to discover the connecting links of all things; their causal connection; to grasp in one view the entire domain of nature; "to discover the one universal idea to which all phenomena, in their causal connection, might be reduced as to a sole principle."

Such vain attempts began with the earliest philosophers, and have been from time to time continued down to the present age. Indeed, the history of philosophy presents but little else but such attempts; so that if we may venture a generalization, those attempts may be regarded as the legitimate results of the natural mode of the human mind in prosecuting its investigations of the Cosmos.

The error of the ancients and of all philosophers has ever been, that of supposing that they had acquired a sufficient number of facts to justify an attempt at generalization. The *Cosmos* of ALEXANDER VON HUMBOLDT, the third and last volume of which is now before us, is the only elaborate attempt at cosmography that has been given to the world: conceived in a proper spirit, and executed in a manner to present a faithful picture of nature, not so crowded with minor objects as to prevent the most important ones from standing out in bold relief.*

The great difficulty with all writers on *Cosmography*, hitherto, has been a too limited acquaintance with *Cosmology*, for the two terms are not synonymous. In this latter, and all-essential respect, Humboldt has had greatly the advantage. A long life of unremitting study, unrestrained by the bitterness of poverty, but on the other hand, aided by every support that affluence and even the patronage of kings could confer, has stored the capacious mind of Baron Von Humboldt with all the vast scientific and intellectual treasures of this transcendent age. Illuminated by all the learning and brilliant discoveries and inventions of the 19th century, his mind has learned to despise the presumption of the ancients, and to see that it is the height of folly to aim at anything more than a faithful delineation of what little of Cosmos science has thus far revealed, although that little is a vast ocean of knowledge, when compared with that possessed by earlier philosophers.

In the first two volumes of the Cosmos, Humboldt has confined himself to two objects only: 1st, the presentation of the simple objectiveness of external phenomena; and secondly, to the exhibition of the intellectual results of the impressions made by the external world upon the inner man, upon his speculative portion, his understanding and reason; besides delineating a general picture of Nature in her two great spheres, the unanalogical and the telluric; thus tracing with a master-hand the outlines of objects from the stars that twinkle amid the nebulæ in the remotest realms of visible

* The first two volumes of Cosmos were reviewed somewhat at length in our volumes of last year.

space, down to our own little planetary system—but a grain of sand on the boundless shores of the universe—and even down to the configurations of the earth's surface; the fossil remains of the earth's great store-book; and still farther down, to the minutest organisms that float in the sunbeams; and to the world of animalcules that, unseen by the naked eye, sport in so many objects on the earth's surface, he includes, as an equally legitimate portion of the Cosmos, the boundless domain of the world of thought; the inner reflex of the outer world; the mental accumulations of thousands of years. And why, indeed, should he not? For what are the phenomena of the external world, without those elaborations, those products of the spiritual labor of the inner man, which the understanding has wrought out from the rough materials presented to it by the external world?

In this last volume Humboldt gives his latest touches to his great cosmical picture, by devoting it to the consideration of the special results of observations in the domain of cosmical phenomena; but before attempting to unfold this portion of his work, we will briefly sketch the labors of cosmologists who have preceded him, as given in the introduction.

An active striving has existed in all ages to discover a principle that would explain all that is variable in the organic world, and many have vainly believed that they had attained to this; but all their labors have amounted to nothing, save to develop their ignorance, and to prove that the object of their toils is "past finding out." Men for a long time, in accordance with the earliest ideas of the Hellenic races, venerated the agency of spirits embodied in human forms, in the creative, changing, and destructive processes of nature; and this finally led to the scientific contemplation and philosophy of the Ionic school. This gross paganism, Aristotle tells us, was "The relics of an earlier acquired and subsequently lost wisdom;" to which he frankly tells us, "Much was mythically added for the *persuasion of the multitude*, as also on account of the laws, and for other useful ends."

The Ionic school traced the first principle of the origin of things to either concrete material principles, the so-called *elements* of nature, or to the processes of rarefaction and condensation. Something similar to this is found in certain cosmical theories of the present day, in which caloric is made the principal agent of force, if not the very essence of matter itself—a mere revival of the old Ionic philosophy. The hypothesis of four or five materially different elements, probably of Indian origin, was undoubtedly ancient in the time of Empedocles, 450 B. C., though he is said to be the first who spoke of them as distinct species of matter. He, too, had formed a sweeping generalization—he had his Cosmos—and had arrived at the conclusion that originally all was one—God, eternal and at rest,—that the elements of things were held together in undistinguishable confusion by love, (φιλεα,) the primal force uniting like to like, and sundered by another primal force, νεικος, or strife. The whole of his philosophy was equally fanciful and absurd.*

* Anthon, Art. Empedocles.

At a later period of the development of the Ionic philosophy, Anaxagoras, of Clazomenæ, who was contemporary with Pericles, had advanced from the pantheism of Empedocles to the idea of spirit, independent of all matter, but uniting and distributing the homogeneous particles of which matter is composed. This spirit he called the world-arranging Intelligence, (νοῦς) the primary source of all motion and all physical phenomena. Anaxagoras devoted much time to mathematics and astronomy. He believed the sun and moon composed of earth, and had right views of the moon's light, and of solar and lunar eclipses. His opinions were considered impious to the gods, and he was cast into prison. He explained the names of the gods allegorically, and gave a moral exposition of the myths of Homer. Simplicius, whose Commentaries are extremely valuable, from their containing numerous fragments of the works of ancient philosophers, cites a very remarkable passage from Anaxagoras, from which it appears that the latter had a correct idea of the motion of the heavenly bodies about a centre. The passage reads: "The heavenly bodies do not fall, in consequence of the centrifugal force being superior to the inherent falling force of bodies, and to their downward tendency." This shows that Anaxagoras, 450 B. C., knew something of centrifugal and centripetal forces, and of gravitation.* He believed that the heavenly bodies revolved from east to west. Whether the Intelligence (νοῦς) of Anaxagoras was the Godhead divine, or merely a pantheistic principle pervading all matter, is a question with commentators.

Plutarch seems to have had some idea of centrifugal and centripetal forces; for, in his work entitled *De Facie in Orbe Lunæ*, he compares the moon, in consequence of its not falling to the earth, to "a stone in a sling."

Next came, to contrast with the philosophy of Empedocles and Anaxagoras, the mathematical symbolism of the Pythagoreans, which also embraced the whole universe. In the world of physical phenomena, the attention of the Pythagoreans was solely directed to what is normal in configuration—the five elementary forms—to the ideas of numbers, measures, harmony, and contrarieties. Numbers they believe to be the imitative representations of all things—typical of eternity, and of the infinitude of nature, because of their illimitability, and boundless capacity for repetition. The essence of things they believe to lie in the form of numerical relations, and that their alterations and metamorphoses were the results of numerical combinations. Plato referred the nature of all substances in the universe, and their different stages of metamorphoses, to corporeal forms, and these again to the simplest triangular plane figures. As to the ultimate elements of matter, Plato made no pretensions. "God alone," says he, "knows what they are."

Aristotle depicts all the phenomena of nature as moving, vital agents, of one general cosmical force.† Heaven and nature depend

* Cosmos, vol. iii., p. 12. † Cosmos, vol. iii., p. 13.

on the "unmoved motus of the universe"—on the world-orderer and world-sustainer. Plato contended that the ultimate course of all sensuous changes must be something non-sensuous, and distinct from all matter. He makes unity a main principle in the different expressions of material force, always reducing these expressions to motions. In Aristotle's *De Insomniis*, speaking of sight, he says: "It is evident, that sight is no less an active than a passive agent, and that vision not only experiences some action from the air, (the medium,) but itself also acts upon the medium." In support of this, Aristotle maintains, that a new and a very pure metallic mirror will, under *certain conditions*, when looked at by a *woman*, retain on its surface cloudy specks that cannot be removed without difficulty. Humboldt thinks that he discovers in this the germ of the undulatory theory of light, now so generally received. It is to be regretted that Aristotle has not told us what the certain conditions are in his experiment with the metallic mirror, and why the eyes of a man will not do as well as those of a woman. Aristotle, we think, must have had some peculiar notions about "woman's eyes."

Aristotle, in all his investigations and reasonings, includes the whole of nature, and the internal connection not only of forces but of organic forms, maintaining that throughout all animated beings there is a scale of gradation from the lowest to the highest forms, nature advancing in an uninterrupted progressive course of development from inanimate matter to plants and animals, the gradations being almost imperceptible. Where a link is wanting in the chain, he supposes that they may be perhaps found to occur in the moon—a very easy mode of supplying the defects of one's ignorance. The great cosmical problem that Aristotle endeavored to solve, was the unity of nature. The author of the "Vestiges of Creation" undoubtedly derived some hints from the philosophy of the Stagirite. Aristotle's inquiries were directed almost exclusively to motion—seldom to differences in matter; and his fundamental idea was, that all telluric natural phenomena are due to the impulse given by the movement of the heavens—the rotation of the celestial sphere. "By the movement of the heavenly sphere," says he, "all that is unstable in natural bodies, and all terrestrial phenomena, are produced.'

In Aristotle's philosophy there was no pantheism. He viewed the Godhead as "the highest ordering unity," omnipresent, determining the nature of all formations, and holding together all things as an absolute power; also attended by *astral spirits*, who maintained the planets in their eternal orbits. Aristotle believed the stars to be active, living beings, and the most divine of created things, τα θειοτερα των φανερων. (*Aristot. De Cælo, lib. i., cap.* 9.)

Such were some of the cosmical views of antiquity, in their vain attempts to reduce all of the phenomena of the universe to one principle of explanation. The attempt has never been relinquished. In coming down to the close of the thirteenth century, passing over the intellectual movements of centuries, which, however, did not advance science much, if any, we find the labors of Aristotle renewed, in the *Opus Majus* of Roger Bacon, the *Mirror of Nature* of Vin-

cenzo de Beauvais, the *Liber Cosmographicus* of Albertus Magnus, and in the *Imago Mundi* of Pierre d'Ailly—works that reflect to us the darkness of the age in which they were written. Humboldt complains that their contents do not fulfil "the promise of their titles." Among the Italians, Bernardino Telesio, of Cosenza, opposed Aristotle's physics, and substituted for them what he called a national science of nature. Some of our philosophers of the present day have made heat, or caloric, the great moving and generative force of the universe; but Bernardino Telesio, equally anxious to explain everything, considered all the phenomena and forms of matter as the result of two forces—heat and cold. The two forces, of which the former appertained to the celestial sphere, while the latter belonged to the terrestrial, originated all plants and animals. This Humboldt calls "unbridled fancy."

Giordano Bruno, a contemporary of Galileo, next attempted to comprehend the whole universe in three works. His cosmical views were purely metaphysical; and he formed many happy conjectures regarding the movements of the fixed stars, the planetary nature of comets, and the deviation, in the form of the earth, from that of a sphere.*

Though Anaxagoras, 450 B. C., and Plutarch, had some idea of gravitation, and of its connection with the motion of the heavenly bodies; and also Simplicius, of the seventh century, Aristotle's commentator, together with Joannes Philoponus, who ascribed the movements of the celestial bodies to "a primitive impulse, and a continued tendency to fall;" and though Copernicus had a general idea of gravitation, defining it as acting in the sun, as the centre of the planetary world, and in the earth and in the moon,† Kepler was the first who made any approach towards a mathematical application of the theory of gravitation, before the appearance of Newton's immortal *Principia Philosophiæ Naturalis.* He was the first, about seventy years before Newton, who gave numerical calculations of the forces of attraction reciprocally exercised upon each other, according to their relative masses, by the earth and moon.‡

Kepler distinctly adduces the tides, as evidence that the attractive force of the moon (*virtus tractoria*) extends to the earth, and that this force would deprive the earth of its waters if the earth should

---

* He was burned at Rome, February 17th, 1600, after being two years confined in the Inquisition. When the sentence of death was announced, he nobly exclaimed:—"Majori forsitan cum timore sententiam in me fertis quam ego accipiam." He was a great admirer of Copernicus, Tycho Brahe, and Kepler.

† The words of Copernicus are as follows:—"Gravitatem non aliud esse quam appetentiam quandam naturalem partibus inditam a divina providentia opificis universorum, ut in unitatem integritatem—que suam sese conferant, in formam globi coeuntes."

‡ Humboldt gives from Kepler's *De Motibus Stellæ Martis* the following passage, from which Kepler's ideas regarding the reciprocal attraction of the heavenly bodies are evident:—"Si duo lapides in aliquo loco Mundi collocarentur propinqui invicem, extra orbem virtutis tertii cognati corporis; illi lapides ad similitude nem duorum magneticorum corporum coirent loco intermedio, quilibet accedens ad alterum tanto intervallo, quanta est alterius *moles* in comparatione. Si luna et terra non retinerentur vi animali [!] aut alia aliqua acquipollente, quælibet in suo circuitu, terra adscenderet ad lunam quinquagesima quarta parte intervalli, luna descenderet ad terram quinquaginta tribus circiter partibus intervalli; ibi jungerentur posito tamen quod substantia utrius-que sit unius et ejusdem densitatis."

cease to attract them. "Si terra cessaret attrahere ad se aquas suas, aquæ marinæ omnes elevarentur et in lunæ corpus influerent."

It is singular that Kepler, the possessor of such correct views, and the discoverer of the three great laws of planetary motion, should have been led afterwards, in 1619, to renounce his correct theory of the tides, and to depict the earth, in his work entitled *Harmonice Mundi*, "as a living monster, whose whale-like mode of breathing occasioned the rise and fall of the ocean in recurring periods of sleeping and waking, dependent on solar time;" and this he does in the very work in which he gives the data for his third law, that the squares of the periodic times of two planets are as the cubes of their mean distance. He indulges in the wildest flights of fancy on the respiration, nutrition, and heat of the *earth-animal*, and on the soul, memory (memoriæ animæ terræ) and creative imagination (animæ telluris imaginatio) of the earth-monster.* Kepler believed so firmly in these chimeras, that he warmly contested his right of priority, in the views regarding the *earth-animal*, with the mystic author of the *Microcosmos*, Robert Fludd, of Oxford.

Descartes was the next who undertook the labors of a cosmographer. He tried to comprise the whole world of phenomena, the heavenly sphere, and all that he knew of inanimate and animate terrestrial nature, in a work entitled *Traité du Monde*, and also *Summa Philosophiæ*. These works were to have appeared in 1633, but the sentence of the Inquisition at Rome, passed upon Galileo, put a stop to Descartes' plans, and deprived the world of a great work, completed by a man who had laid the foundation of many departments of mathematical physics, and who was possessed not only of a great versatility of physical knowledge, but of immense learning.

The motives that restrained Descartes, says Humboldt, from publishing his Cosmos, were love of peaceful retirement in his secluded abode at Deventer, and a pious desire not to treat irreverently the decrees pronounced by the Holy Chair against the planetary movement of the earth; at least such were the reasons which he assigned in his letters to Father Mersenne. The substance, however, of his suppressed works, has since been published in detached portions.

The next cosmological effort was the *Cosmotheoros* of Huygens, which, however, did not appear until after his death. It consists, says Humboldt, of the dreams and fancies of a great man on the animal and vegetable worlds; of the most remote cosmical bodies, and especially of the modifications of form which the human race may there present. Emanuel Kant has borrowed from Huygens many of his dreams regarding the inhabitants of the planets. Huygens found difficulty in peopling the moon, since he believed it destitute both of air and water, like many astronomers of the present day.

Last of all came the author of the *Philosophiæ Naturalis Principia Mathematica*, the immortal NEWTON, who embraced the whole

* Cosmos, vol. iii. p. 19.

unanalogical portion of the Cosmos in the causal connection of its phenomena, by the assumption of one all-controlling fundamental moving force—gravitation. Of all the attempts that have been made to refer all physical phenomena to one fundamental principle, that of Newton, with his theory of gravitation, is the most comprehensive and richest in cosmical results. The problem, however, is very far from being solved. Though Newton referred the movements of all cosmical bodies to gravitation, he did not consider, like Kant and others, gravitation to be an *essential* property of bodies, but as the result of some higher and still unknown power, or of "the centrifugal force of the ether which fills the realms of space, and is rarer within bodies, but increases in density outward. I seek," says he, "the cause of gravity in the ether."* Newton, however, was very cautious in expressing himself in regard to the cause of gravitation. "Rationem parum gravitatis proprietatum," says he, "ex phænomenis nondum potui deducere, et hypotheses non finge. Satis est quod gravitas revera existat et agat secundum leges a nobis expositas."†

Newton afterwards entirely relinquished this hypothesis of the rarer and denser ether.‡ In his *Optics* he says, "What I call attraction may be performed by *impulse*, or by some other means unknown to me. Bodies act one upon another by the attraction of gravity, magnetism, and electricity; and it is not improbable that there may be more attractive powers than these." It is evident from his writings, that Newton had nothing to offer concerning the cause of gravitation but vague conjecture. That it was the result of *impulse* from an ether filling all interplanetary spaces, cannot be inferred from his works. He certainly believed that the ether itself possessed gravity, as is seen by his 2d corollary of Theorem VI., Book iii., of the Principia.

Whatever others may think about the matter, we prefer the idea that gravitation is an essential property of bodies, since we cannot find or conceive of any kind of matter not subject to gravity. Kant says, "We cannot conceive the existence of matter without these forces of attraction and repulsion." We can just as easily conceive of matter without extension as without gravity, and therefore the one is just as essential as the other. Newton evidently knew nothing of the *cause* of gravitation; and, indeed, who is there that does? He thought the search for it vain, and contented himself with saying, "Satis est quod gravitas revera existat et agat secundum leges a nobis expositas."

Such is a brief sketch of the various attempts made with the view of considering the phenomena of the universe as a unity of nature. Such attempts are worthy of the human mind; but we know, as yet, too little of the boundless field of physical sciences to enable even a Humboldt to solve such a problem. Nature may be compared, in its totality, to a number composed of an infinite number of

* Letter to Robert Boyle, 1678. † *Principia*, New-York ed. p. 506.
‡ Cosmos, vol. iii, p. 23.

figures. As yet, the learning and observations of man have scarcely enabled him to master the units and tens of this vast numerical series of figures; and millions of years will probably elapse before we shall have arrived in the enumeration to the place of millions; and even then we shall have but just begun. To grasp the value of the whole number, we must know all the figures of which it is composed. To comprise, then, "in one organic whole the entire science of nature," is a thing to man impossible. The solution of such a grand and sublime problem belongs to the celestial mathematics of God alone; who, sitting upon high Olympus, can sweep with his golden compasses the entire domain of his creation. However humiliating it may be to the mind, man is destined to grope his way for millions of years to come, among a tangled mass of inferior initial problems and phenomena, many of which he will never be able to comprehend.

In what light, indeed, we may contemplate nature, taken as a whole, or what little of it the eyes of man has yet seen, is a question that may well be considered. Can we, indeed, view it as a development? Nothing can be regarded as a development where causal connection cannot be traced; and how very limited is man's knowledge, as yet, of the causal connection of nature's phenomena! It is in respect to causal connection that man's knowledge fails. We can only thus far look upon phenomena as facts; but as to their causal connection, we know, in most cases, nothing. Hence so many, as yet, unsolved problems in physics; such as,—What is the cause of the apparently irregular distribution of the planets, in reference to size, density, inclination of axes, eccentricity of orbits, and the number and distance of their satellites? What is the cause of chemical differences of matter? and a great many other such questions. "Our knowledge of the primeval ages of the world's physical history," says Humboldt, "does not extend sufficiently far to allow of our depicting the present condition of things as one of development."

Science is complete only so far as causal connection is traced. To talk of taking a view of the entire domain of nature—of viewing nature as a whole, is an absurdity which can be excused only by the finiteness of man's intellectual nature.

In giving the special results of observations hitherto made in the domain of cosmical phenomena, Humboldt begins with Astrognosy, or the region of the fixed stars, so called, and assumes that nothing is stationary in space—a proposition that finds support from the fact, that it is now incontrovertibly proved that many of the stars have changed their positions. If ancient observations, in regard to the positions of the stars, may be relied on as correct, Arcturus, within the last 2,100 years, has moved a distance of $2\frac{1}{2}$ times the moon's diameter; the star u, of Cassiopeiae, $3\frac{1}{2}$ lunar diameters; and 61 Cygni, 6 lunar diameters.

The limits assigned to us for this paper preclude our giving as extended a notice of the third volume of the Cosmos as we would wish to make; and we can, therefore, only indicate some of the heads of the subjects embraced in it. In discussing the astrognostic sphere, Hum-

boldt enters into the consideration of the realms of space, the bodies known to occupy it, and discusses the many conjectures that have been made regarding what occupies the space between the heavenly bodies. It is remarkable that Aristotle doubted the infinity of space. It is conceded that all space is filled with something called ether. The revolutions of Encke's comet prove, indeed, some sort of resisting medium—an ether, by the vibrations of which the phenomena of light, and possibly of heat, electricity and magnetism, are produced. The ancients believed the ether to be of a fiery nature.

A curious dilemma was long since started, regarding the transmission of light from the stars. Since we cannot conceive of any point in the infinite regions of space, unoccupied by a fixed star—a sun—the entire vault of heaven ought to appear as luminous as our sun, if light were transmitted to us in perfect intensity; or, if such be not the case, we must assume that the intensity of light is diminished in passing through space, and, in a degree, greater than in the inverse ratio of the square of the distance. As the whole heavens are not almost uniformly illuminated by such a radiance of light, the regions of space, according to Struve and others, are not perfectly transparent.

The question, whether the atmosphere of the earth has any definite limit, Humboldt regards as partially, at least, settled by Farraday's experiments, which, he says, "have given considerable weight to the assumption of a definite surface of the atmosphere, similar to the surface of the sea."

Humboldt makes some very interesting observations on the dioptric tubes used by the Arabian astronomers, and probably by the Greeks and Romans, as the only substitute they had for telescopes. The ancients, as we learn from Seneca, knew the magnifying power of hollow glass spheres filled with water; but these spheres they never applied to the observation of the heavens. It is a remarkable fact, that the basis of a very important part of the astronomy of our planetary system was laid *before* the invention of the telescope. Humboldt observes, that the transition from natural to telescopic vision was more important to astronomy than the discovery of America to geography. What a wide world of thought has the telescope laid open! How has it, extending infinitely our insight into creation, strengthened the intellectual powers, enriched the sphere of human ideas, and ennobled humanity! What a splendor has it given to mathematical science, and to physical astronomy! It has advanced the astronomical knowledge of the solar system to that of a sublime system of the universe.

The ancients had very confused notions of space and the heavens. Empedocles supposed the vault of the heavens to be solid, and composed of *frozen air, aërem glaciatum,* as Lactantius has it. "The idea," says Humboldt, "of a crystalline vault of heaven, was handed down to the middle ages by the fathers of the Church, who believed the firmament to consist of from seven to ten glassa strata, incasing one another, like the different coatings of an onion. This supposition," says he, "still keeps its ground in some of the monasteries of Southern Europe, where I was greatly surprised to hear a venerable pre-

late express an opinion, in reference to the fall of ærolites at Aigle, that the bodies which we call meteoric-stones, with vitrified crusts, were not portions of the fallen stone itself, but simply fragments of the crystal vault shattered by it in its fall."*

Humboldt devotes a large portion of his last volume of the Cosmos to the consideration of the scintillation of the stars, and the velocity of light and electricity; citing the labors of Mr. Walker, of this country, to the number, distribution, and color of the fixed stars; to the stellar masses and the milky-way, interspersed with nebulous spots; to new stars, and those that have vanished; to the variability of certain stars, as to color and intensity of light; under all of which heads he gives much that is highly curious and important. He adopts the opinion of Bessel, "the greatest astronomer of our time," that the celestial spaces are filled with vast numbers of immensely large, non-luminous, and invisible bodies. Such was the opinion of the immortal author of the *Mechanique Céleste.* "There exists," says Laplace, "in celestial space, dark bodies, probably in as great numbers as the stars."

In treating of the proper motions of the fixed stars, and the determination of their parallaxes, Humboldt discusses the mutually dependent problems of *the motion of the solar system*, and *the position of the centre of gravity in the heaven of the fixed stars.* The first admits of a satisfactory solution, since we are enabled to determine the parallaxes of certain stars. According to Peters, 33 parallaxes have already been discovered. The director of the Dorpat observatory has determined the positions and proper motions of more than 800 stars. Mädler has labored much at the solution of the second problem; but he has been obliged to confess, that his attempted solution is, in consequence of the many mutually compensating forces which enter into it, devoid "of anything like evidence amounting to a complete and scientifically certain proof."†

The translation in space of the whole solar system is now an established fact. The labors of Bessel, Struve, Mädler, Argelander, and many others, have placed this beyond a doubt. It is not, however, a new idea, for Bradley, in his labors on mutation, contained in his great work of 1748, speaks of the solar system changing its place; and also suggests methods of determining the fact. When we speak of a great centre of gravity (the heavenly bodies moving about no other kind of centre) about which our solar system, as a whole, revolves, Humboldt considers that "we enter the domain of mere conjecture."‡

Humboldt closes his work with a valuable chapter on the double stars, in which, however, there is nothing not generally known.

We have thus passed rapidly over this last volume of the Cosmos, noting such things as might be most interesting to the general reader, whom we must refer to the work itself for a rich treasure of details.

---

* Cosmos, vol. iii., p. 125. † Cosmos, vol iii., p. 195.
‡ Cosmos, vol. iii., p. 197.

ART. IV.—ON EXTENDING THE COMMERCE OF THE SOUTH AND WEST BY SEA.*

NATIONAL OBSERVATORY,
Washington, Dec. 16, 1851.

To GLENDY BURKE, A. D. CROSSMAN, J. D. B. DE BOW, Esqs., &c. &c.,
Committee Southwestern Rail-Road Convention:

Gentlemen,—I am in receipt of your esteemed favor, informing me of the Rail-Road Convention to be held in New-Orleans on the first Monday in January next, and inviting me to be present, and "address the Convention upon the extension of Southern and Western commerce; the home and foreign trade as they are influenced by facilities of intercourse and communication by rail-roads or otherwise; or to prepare a report upon these subjects, to be read before the Convention, and placed among its documents."

My official engagements put it out of my power to attend; and I regret exceedingly that present calls upon my attention will not, at this late day, allow me to give as much time to the consideration of the vast subjects which are about to occupy the attention of the Convention as their importance deserves.

Had I the time requisite for the necessary reflection, arrangement and consideration, the very few thoughts that I have to offer might be presented in paragraphs as few.

Happy at all times to aid in a good work, and truly grateful to you for the privilege of doing good, if I be able, I make the following reply, in homage of my respect, and as a good-will offering for the success of those great enterprises which you have in hand.

Most of the rail-roads run across the ridges, and go from valley to valley. In one sense, our navigable water courses may be considered as inclined planes, and the river craft as gravity-cars, which, taking advantage of a physical principle, convey the produce to market at a cheap rate along the natural descents of the country. Hence the very striking feature in our internal improvement system: the rail-roads and navigable rivers cross at right angles. This is the rule. The Hudson River Rail-Road, and some of those which are either in contemplation or in process of actual construction in the South, are the exceptions which make that rule general.

Can the steam-car on the land successfully compete in the transportation of merchandise with the gravity-car on the water?

This is one of the questions which will no doubt command the deliberations of the Convention. Its members will be far better able to judge than I am, whether the condition of your part of the country be such that railways may run along parallel with your magnificent water courses, and live.

---

* This able paper was ordered to be printed among the documents of the Convention. We are happy to give it to our readers in advance of their publication.—[*Editor*.

But in considering it, it should not be forgotten that this is an age of advancement and improvement. It was but a few years ago only that it was said, and the world believed, that the power of steam could not compete with the free winds of heaven in propelling vessels to and fro across the ocean. And I am not prepared to say that railways may not compete with the Mississippi in the transportation of merchandise, as well as of travelers.

Times have greatly changed: you all can recollect, gentlemen, when the price of cotton depended upon which way the wind blew. If easterly winds prevailed so as to prevent the arrival of the cotton fleet in Liverpool, up went the staple. Some swift-footed packet was dispatched over with the intelligence, and he who could outride the mail, and reach your markets first, made his fortune. But steam and the telegraph have done away with this. There is no more room for that sort of enterprise, as it used to be called. New-York and New-Orleans, with the forked tongue of the lightning, now talk daily together about the price of cotton and every thing else; and there is no more chance for the merchant to display his enterprise by getting control of private and peculiar sources of information. All information now as to the state of markets, is common.

Salem once had command of the tea-trade. Her merchants, ascertaining that the stocks on hand were small, and the sources of immediate supply scanty, would club together and buy up, for a speculation, all the tea in the country. But now, a cargo of tea arrives—the fact is known. The telegraph passes the word fore and aft through every state, and asks who wants?

If Salem merchants should demand one farthing more than those of New-York are willing to take, the telegraph would give the order to New-York. And so with every other article known to commerce.

Southern and Western merchants now, by reason of steam and lightning, can stay at home, send out orders, and get from France and England their supplies much sooner than a few years ago they could get them from Baltimore, New-York or Philadelphia, after having gone there to order them. The consequence is, that Southern and Western merchants do this; and there are now in that section of the country, houses engaged in importing from abroad.

The fact is, the producer and consumer are much nearer together than they used to be; consequently, the factor does not keep the large stocks of former times on hand. He draws from the sources of supply just in proportion as the channels of demand are glutted or free.

The chances of speculation are small, and profits are brought down to the smallest figure.

All these circumstances have impressed themselves upon the business of the country, imparted new features to it, and made necessary important changes in the mode and means of conducting it.

These changes, and the causes of them, have powerful bearings upon the subjects which the Convention is called to take into consideration.

They, and the operations of the warehousing system, have caused men of business to establish in St. Louis, Cincinnati, and Louisville, &c., foreign importing houses. The duties collected in these three cities for the current year, amount to nearly half a million, and the value of the foreign merchandise imported direct to, upward of a million and a half. These importers and the warehousing system are recovering back to the South a portion of the direct trade. The duties collected at Charleston this year are greater than they have ever been; and Charleston imports largely of Havana cigars for New-York.

It is true that the quantity of produce coming to New-Orleans in search of a market, has fallen off; and, consequently, the number of vessels arriving and departing, has decreased. This is what has alarmed, and justly alarmed, the people of New-Orleans. The cry is, "what's the matter? Here, there is decline, where there ought to be robust, vigorous health; depletion, where we ought to look for habits plethoric and full. What is it that has brought our city to this state of decline?" It appears to me that a satisfactory answer to this question is a necessary preliminary to the treatment of the case—to the application of remedies.

It is in the domestic trade, I apprehend, that the great falling off has taken place; or rather, I should say, it is in the export trade by sea, whether domestic or foreign, and not in the imports by sea, where the decline is; and if a decline in the quantity of produce going out of the mouth of the Mississippi has taken place, why, of course, a decline in the quantity delivered at New-Orleans from the upper country has preceded.

To satisfy myself as to the correctness of these views with regard to the import trade of the Mississippi River, I called upon the commissioner of customs, who has obligingly furnished me with the following tabular statement of the gross revenue collected at New-Orleans, &c., for the last five years:—

GOVERNMENT RECEIPTS FOR CUSTOMS.

	New-Orleans.	Cincinnati.	St. Louis.	Louisville.
1847....	$1,621,357 08....	$31,793 04....	$52,751 69....	$8,752 98
1848....	1,714,880 43....	56,874 79....	60,618 38....	8,648 81
1849....	1,594,742 27....	41,859 65....	54,334 04....	26,663 26
1850....	1,924,698 41....	133,838 76....	122,914 91....	59,901 00
1851....	2,296,636 08....	149,187 15....	211,526 19....	64,795 37

"The revenue collected at Cincinnati, St. Louis, and Louisville, and other ports similarly situated, was derived from importations of foreign merchandise at New-Orleans.

The importations of coffee (free) at New-Orleans, does not appear in this statement.

The returns since 1st July, 1851, compare favorably with last year up to the present date.

C. W. R.

Dec. 15th, 1851."

There are other places in the valley where duties are collected also; but this table shows a regular, steady, and business-like in-

crease in the direct importations of foreign merchandise into the Mississippi valley by way of New-Orleans. The duties upon it have increased during the five years ending with the 30th June last, in round numbers, from $1,715,000 to $2,722,000, or at the average rate of nearly 12 per cent. per annum.

Now, the reason that the export sea-trade of New-Orleans has decreased, and its foreign trade increased, if traced back to first principles, will be found depending for an explanation upon steam and lightning, upon the improvements of navigation and ship-building, and upon the obstructions to navigation at the mouth of the Mississippi River.

In consequence of the first of these, a punctuality and a certainty have been given to commercial transactions, which, as before stated, have broken up almost entirely those transactions which were formerly known as "commercial speculations." Punctuality in filling orders and delivering goods where they are required, is now a vital principle to wholesome commerce. Dealers and factors are brought down to the smallest margin for commissions and profits. Merchants will tell you that profits now consist in parings made by close cutting: a little here, and a little there. Therefore, to save the handling of the produce of the Mississippi valley, once on its way to market, is profits.

Hence, all that produce which used to be shipped from New-Orleans to New-York, and then re-shipped thence for European markets, and all that foreign merchandise which used to be imported into New-York, and sent thence to New-Orleans, is beginning to go and come direct to New-Orleans, in order to save the transhipment. Many of the agencies that used to be employed between the producer and consumer, have been stricken down by the lightning; and the tendency of steam and the telegraph is to bring the producer and consumer more and more into direct intercourse.

In evidence of this, we may point to the importing houses that are springing up in the cities of the valley. In St. Louis, for example: there the wholesale merchants do not, as formerly, buy of the Eastern importer, and of course pay him his fees, commissions and profits; but they are beginning now to go direct to the foreign producer, as the eastern importer does, and order direct; thus saving the expenses of an agency, or the part of one at least.

The enterprise of Illinois has created another mouth to the Mississippi, and placed it in Lake Michigan. Much of the produce which formerly touched at New-Orleans on its way to market, now goes through that canal; and for certain articles, its influence is felt even on the plantations in the state of Louisiana; for some articles even from there, are turning about and flowing up stream: sugar is one, molasses another.

Before this canal was opened, the sugar of Louisiana, in order to reach the consumer in the lake country, had to go down to New-Orleans, then round by sea to New-York, then up to the lakes, and so across by water, boxing the compass to get to Chicago. Now

that canal is beginning to supply that whole region of country with sugar and molasses, which it attracts up the Mississippi.

This lessens the receipts of freight at New-Orleans; but it benefits both producer and consumer; and it is not, I apprehend, any part of the objects of the Convention to interfere with a business so legitimate and proper as this is, and which all the railways in the world can no more bring back than they can stop up that canal. It is the object of the Convention to assist the sugar and the molasses to get to Chicago by railway, if sugar and molasses shall prefer that, to water carriage.

We buy *Virginia* hams here in Washington now that are cured in Terre Haute, on the Wabash. By the old and natural roads to market that could not be; the route of the ham would have been down to New-Orleans, thence by ship to New-York, and thence back by a packet into the Capes of Virginia, and so up the Potomac to Washington—a two or three months' voyage, during which, in consequence of the climates through which it must have passed, and the stowage it must encounter, it probably would have *come to life* again. At any rate, it would have been *alive* by the time it reached this place.

Now, in consequence of these rail-roads, which have been tapping the Mississippi valley, the "*Westphalias*" of Terre Haute can reach here in a week by paying ¼ cent a lb. They come up the Ohio, instead of going down; and across by rail-road, instead of around by water.

The commercial history of this ham is that of much produce in the valley of the upper Mississippi. Here, therefore, in these tapping railways, is to be found another of the silent causes which have lessened the deliveries of produce at New-Orleans.

To add to the deleterious effects upon New-Orleans of this tapping of the Mississippi River at the other end of its valley, and on the eastern side, are the bars at the Balize, and the influence which the depth of water there exercises—the baneful influence which the bar there exercises upon the models and the sailing qualities, and in fact, upon the whole economy of the ships that are built for the New-Orleans trade. And it is bad for the owners to be compelled to build ships that will not answer equally well for all trades. The best carriers, therefore, cannot come to New-Orleans. If they could, New-Orleans would soon find her merchants shipping the produce that lines the levee direct to its foreign port of destination. As it is, the ingenuity of ship-builders has contrived models for cotton ships.

These are immense carriers, and can take cotton to England at rates which a few years ago would have been considered ruinous to owners.

These vessels being once loaded and over the bar into blue water, will take cotton to Liverpool nearly as cheap as they will to New-York or Boston. The voyage is short, and perhaps the chances for a return cargo are better in Liverpool; therefore, they go direct.

In these facts and circumstances, and in this view of them, we can see the operation of causes which tend to increase the foreign export

trade on one hand, and to decrease it on the other. These cotton ships are not good provision and assorted-cargo carriers. The clippers are for that. The new models beat steam. One of them (the Flying Cloud) has been known to sail 430 statute miles in one day, and upwards of 1100 miles in three consecutive days. These ships cannot come to New-Orleans. The bar will not admit them; and one of them can go to California and return while a "cotton droger" is getting around Cape Horn.

Besides, the winds are such, that a vessel, bound from New-Orleans to Brazil or California, has to go out of the gulf into the Gulf Stream, and then steer northwardly, till she reaches the parallel of 35° or 40°, so that it is not greatly out of her way to touch at New-York. Hence, most of the trade with California in produce of the Mississippi valley is carried on by the way of New-York, on account of the bar at the mouth of the Mississippi.

In all these circumstances are to be found lamps for our feet, and lights for our eyes, as we attempt to devise the ways by which enterprise and energy may restore to New-Orleans all the advantages which their absence from her high places has suffered to be taken away from her, or to be withheld, because never enjoyed.

The objects of the Convention, as set forth in the committee's circular of November 4th, 1851, "are, as far as possible, to bring about a concentration and unity of effort in all these states, in the extension of their rail-road systems, and in bringing into more active connection their population and their industry."

But it seems to be the wish of the committee that I should confine my attention to "the extension of southern and western commerce, the home and foreign trade, &c." Therefore, being invited out to sea, I shall let the rail-roads, which it is the special object of the Convention to encourage, alone. I take my departure from the premises above stated, and treat of extending the commerce of the Mississippi valley, &c., by sea.

The apparent decline in the business of New-Orleans is, as I have already intimated, due to the effects of the telegraph and rail-road, and to the improvements in steam, ship-building, and navigation. This is the root of the matter. What, then, are the steps which the South and West ought to take—what are the measures which they ought to adopt, in order to insure to them that degree of commercial wealth and prosperity, which their resources and their geographical position entitle them to expect?

The answer to this question lies under several heads, and the principal of them are these:

1st—A liberal policy on the part of New-Orleans, touching fees of various kinds, to which the produce that comes there shall be subjected.

2d—Embankments, to confine the Mississippi River in its channel.

3d—To deepen the water on one of the bars in the passes of the river.

4th—The establishment of lines of sea-steamers.

5th—Attention to the mineral resources of our region of country, and a free use of its manufacturing facilities.

6th—The opening of commercial highways across the Isthmus.

7th—The establishment, in the Mississippi valley, of a navy-yard, depot, and work-shops, which in war shall have strength, capacity, and resources enough to give us command of the Gulf of Mexico, and control of the commerce passing through it.

8th—The free navigation of the Amazon River, and the building up there of those business relations and friendly ties, which hold nations together in the bonds of peace and friendship.

These are the measures—the means are simple: they consist in a firm reliance upon our own abilities, with a determination to perform our part in the matter, and to require the government to do its part as well.

Such are the questions which I propose to consider, except in so far as the proposed rail-roads may be involved in the case. That, as already remarked, I leave to wiser heads.

If the people of the South and West will be but true to themselves—if they will put their shoulders to the wheel, and, as one man, appear, in the persons of their representatives here, in the halls of Congress, and insist upon fair, even-handed justice in the appropriations for public works, that course of legislation will follow, which long ago ought to have been adopted with regard to the Mississippi River, and kindred subjects.

I do not present these measures, or any of them, as substitutes or rivals to the proposed system of railways; nor do I hold them up as measures which will, ought, or should divert attention from the railways. There will be ability enough in the Convention to treat all of these measures, and to present each one to the public in its true bearings upon the common weal; and there is energy with enterprise enough in that region to carry them all on together.

II. The drowned lands in the Mississippi valley have been ceded to the states in which they lie, upon condition that those states, in reclaiming them, will confine the river within its banks.

The reclamation of these lands would improve the climate of a vast region of country, and make it much more salubrious: it would add vastly to the wealth of those states by giving value to the lands, and greatly increase their commercial resources by bringing immense regions of these vacant lands under cultivation; and it would also vastly improve the navigation of the river.

An object of so much importance to the health and prosperity of so many people, in so many states, is certainly worth looking after; and the work, when done, should be done in the most thorough and effective manner.

Therefore let us pray Congress for the appointment of an engineer who shall plan the work; and for the enactment of a statute, requiring the states to have the work done according to that plan.

This work is to last for all time. Suppose, therefore, merely for the sake of illustration, that one of the states above Louisiana should be unfortunate in the adoption of a plan; that after having let the work, accepted it, and parted with the lands, experience should prove the plan to be bad or the work to be useless. Louisiana then is

overflowed in spite of herself; and her works, which we will suppose were really sufficient, are thus in danger of being rendered of no avail.

The prosperity of the valley is to be greatly affected by this work of embankment, drainage, and reclamation; and, therefore, the best talents that the country affords should be employed to direct it.

III. More than fourteen feet water cannot now be counted upon in crossing any of the bars at the Balize. Vessels drawing sixteen feet are sometimes dragged over them through the mud.

As for the ability of New-Orleans, or the people who send their produce there on its way to market, to avail themselves of the improvement in ship-building, as long as the passes of the river are obstructed by bars, it is out of the question. The sailing qualities of ships are according to their models; their models are regulated by their draught; and their draught is controlled by the depth of water on the bar. Therefore, the people of the great valley of the West, the men whose labors and whose enterprise have put the heart of the country where it is, and who supply all those great staples out of which the business of commerce raises revenue for the government—therefore, I say, those people must be doomed to second and third rate ships to do business for them upon the great waters, because that government will not do its duty. Had the people of the Mississippi valley been true to themselves, no representative of theirs would have ever been found recording his vote more than once against an appropriation for keeping the mouth of that river free and open for ships of the largest class.

A year or two ago, the Secretary of the Navy was kind enough to yield to my solicitations, and to direct a series of observations to be conducted upon the habits of the Mississippi River, at Memphis. This series commenced 1st March, 1850, and was continued daily for a year, by Robert A. Marr, Passed Mid. U. S. Navy; a most intelligent officer, and a patient and indefatigable observer.

His attention was directed, among other things, to the volume of water, as well as the quantity of sediment, borne down the river by Memphis.

His observations were most carefully made. According to them, and upon the supposition that the year gave a fair average, there go by Memphis daily, 471,550 cubic yards of sand and mud, or silt, as it is called.

Because the river runs faster at Memphis than it does at and below New-Orleans, and because, as the current slackens, the silt is precipitated, we are, I presume, correct in the inference, that the waters of the Mississippi River are more heavily laden with silt as they pass Memphis, than they are when they reach the Balize.

Now we know very well, and we derive the knowledge from many years of observation, that the Mississippi River does not raise its bottom, below New-Orleans, at the rate of more than a few inches in a year, if at the rate of an inch.

To cross the bar at either of the passes, a vessel has only to sail a few hundred yards. Suppose the bar were to rise up at the rate of one or two feet, instead of a few inches in the year; the channel-

way across the bar for ships need not be more than 300 or 400 feet wide; and how much dredging would it take to excavate annually a layer of mud one or two feet deep, from a channel-way a quarter of a mile long, by 300 or 400 feet wide?

This is the matter about which the government has, for the last twenty years, been having examinations made. Examinations will never satisfy. Let us make the experiment.*

I have no doubt whatever as to the practicability of deepening one or more of the bars at the mouth of the Mississippi, and by dredging, of keeping any required depth of water there. A gale might now and then interfere with it. But it is a case in which experiment, and experiment alone, can properly decide. It is worth the trial. I hope, therefore, that the delegates to the Convention, and the people whom they represent, will take the matter in hand, and not rest till Congress causes the experiment of deepening one of the bars at the mouth of the Mississippi to be made. This is no New-Orleans question: it is not confined to the valley, nor to the people of the South and West. It is a great national concern. The people of Missouri, Iowa, and Tennessee, of Maine, Massachussetts, and Texas, are as much interested in this matter as are those of Louisiana.

IV. Steamships are the railways of the sea.

Notwithstanding there be fine navigable streams and good turnpike roads leading into a city, it is found, by ample experience, that a few rail-roads, well placed and brought into the same city, will vastly increase its business, and, hence, its prosperity.

What is singular about these railways is, that they do not interfere with the turnpikes nor the river trade. They create a business of their own.

So it is with lines of steamships. They do not interfere with the coasters and the sailing packets, which answer to the turnpike and river craft of the interior. But they also create a business of their own. Look what the European steamers have done for New-York and Boston. So far from interfering with the business under canvass, from those cities, they have stimulated it, and made it more active. Ever since steamers began to ply between New-York and Liverpool, the New-York packet ships have been increasing both in number and size. And it is as idle for us of the South and West to repose upon the great commercial advantages which nature has vouchsafed to New-Orleans, or to that region of country, by reason of her own geographical position, and the geographical position of the Gulf of Mexico—it is as idle, I say, for the people to rest quiet, and expect the proper lines of steamers to come to them, as it has been for them to rest quiet upon the advantages which the Mississippi River gave them, while all around them was enterprise and activity. Other cities and sections tapped the Mississippi valley, and sent rail-roads there for their own benefit and advantage. They may also, from the same motives, send their steamships to ply about New-Orleans. The people of New-Orleans have waked up to the reality of their

* See an article upon this subject, in the September Number of the "Western Review," published at St. Louis.

position in one of those respects. The watchful are never caught asleep twice; and it is time they were beginning to be up and doing in the other.

VI. As soon as there is a commercial thoroughfare across the Isthmus, which will unload, handle, and transport the breadstuffs with the other heavy produce of the Mississippi valley, across the Isthmus, and put it on board ships in the Pacific for less than it costs to get it as far as Cape Horn, on the way, that moment is the Gulf of Mexico raised to the summit level of this world's commerce.

All nations will then be down hill from the Gulf; and the people who inhabit the great valley of the West, and who pass its produce down through the Mississippi River into the Gulf, and deliver it there to the winds of heaven, or the currents of the sea, may then take their choice, and go with it by down-stream or fair-wind navigation, to any market place upon the sea-shore in the wide world.

Then, New-Orleans, instead of New-York, should glut the markets of California and Peru with breadstuffs, cucuyos and merchandise.

Then, the valley of the West, instead of the coal mines of England and the mines of Pennsylvania, should supply the vast demands which the Pacific Ocean has, and the far greater which it will have, for coals. It will give New-Orleans the command of a better coffee market than any she now has; and she can then send coffee, along with Louisiana sugar, up to that other mouth of the Mississippi, which Illinois enterprise has discovered in Lake Michigan.

Therefore, let the people of the South and West take time by the forelock, and wake up Tennessee and Kentucky, and other parts, to their duty, in that great manufacturing and mining region which nature has fitted them to be.

The people of South America and California, and the isles of the Pacific, will depend on them for merchandise; for the ports and outlets to market of the western people; and Southern states will then be the half-way house on the great market-ways. England and Europe, to reach the "grand ocean," as the French navigators style the Pacific, will have to pass by our very doors as they go, and come within call as they return.

A magnificent future is that which commerce, by the laws of trade, and the decrees of nature, holds in store for the people of the South and West. If we will only do our part, the prize is won, and the wealth and the power are ours also.

VII. Should there ever be, and doubtless there will be, several such highways across the Isthmus; and should war ever again occur among maritime nations, is it to be supposed that the belligerents, be they who they may, will look on and see us quietly enjoying all the advantages of these thoroughfares, and becoming thereby a head and shoulders taller than all the nations in the world? No, never.

Moreover, we are bound by that golden cord which never has, and —as far as it depends upon the people from my part of the country, whom I now address—which never can be tarnished or weakened—by the faith of this great nation, are we bound to maintain the neutrality of those highways.

That we may do this—that we may be true to ourselves, and secure in the possession of that great edifice of commerce, of wealth, grandeur and power, the keystone of which you have assembled to put in, the naval supremacy and command of the Gulf of Mexico, a *mare clausum*, and an American sea, is a *sine qua non*. It will never do to let Great Britain, or any other power, command that sheet of water with her ships of war.

To whom shall its defences be entrusted, but to us of the South and West, who have so much at stake there? It is well known that we will fight hard for our cotton bags.

Therefore, fortify the Tortugas, and build up the navy-yard at Memphis. The South and the West have been thimble-rigged out of that navy-yard. The law made it a naval depot, or dock-yard. It has been converted into a rope-walk, and thereby it has become a by-word and a reproach, if not an eyesore to its friends.

I repeat here what I have recently had occasion officially to upon the same subject:

"The enterprise of American citizens is about to open one or more commercial highways across the Isthmus. The access to them lies through American waters. They will be the channels of communication between the distant shores of the nation—its great highways from one part of the Union to the other.

"The faith of the nation has been pledged, touching the neutrality of some of these communications. The country will expect its navy to keep them open in war, and to preserve unsullied the national faith.

"The way to these thoroughfares, and the road to market from the Mississippi valley, run side by side through the Gulf of Mexico.

"No system of measures for providing for the common defence can be considered either complete or effective, unless it secure the command to us of this *mare clausum*. Its commercial importance, already great, will, in a few years more, be paramount.

"Already the natural outlet for millions, it is destined to surpass all other arms of the sea for its commerce, its wealth, and its national importance.

"The currents and winds at sea are such as to unite, in the Florida Pass, the commercial mouth of the Amazon with that of the Mississippi.

"The market-way across the seas, from the valley of the Amazon, the Orinoko, the Magdalena, the Atrato, the Coatzacoalcos, the Rio Grande, and the Mississippi, passes through or upon the borders of this sea.

"The works are projected which will turn in that direction the commerce of the East; and all the ships engaged in it, whether from Europe or America, will sail through the Gulf of Mexico and Caribbean Sea, passing by our doors both coming and going.

"Through the Gulf of Mexico and Caribbean Sea, the country requires safe conduct in war for its mails, its citizens, and their merchandise, as they pass to and fro from one part of the Union to the other.

"The natural outlet to a system of river basins, that include within their broad dimensions 70 degrees of latitude—the most fertile lands in either hemisphere, and an area of them exceeding in extent the whole continent of Europe—this arm of the ocean that is spread out before our southern doors, occupies that position upon which the business of commerce is to reach its summit level.

"Here is to be the scene of contest between maritime nations in war. Here are the gateways of the ocean; and the power will hold the keys thereof, that has the naval supremacy in the Gulf of Mexico.

"The great sea-fights of this country are probably to take place here."

In the valley of the Mississippi nature has placed the means, and our free institutions the men, for defending that gulf and the interests connected therewith. Unless we avail ourselves of these resources, it will be difficult and expensive to command it in war.

Therefore, in providing a system of national defences for our interests in that quarter, one of the first steps is to complete the navy-yard at Memphis, and make of it an establishment worthy of its objects, and capable of giving force and effect, in time of war, to the immense naval resources, power and strength of the great valley of the West.

To Memphis, Pensacola, and the fortifications at Key West and Tortugas, ought to be mainly entrusted the defences of the Gulf of Mexico.

It has been said, "It is too expensive to build a navy-yard at Memphis: piles will have to be driven at the edge of the river;" yet it is not too expensive to drive them in the bottom of the sea at New-York, and build there a dock, which the Secretary of the Navy, in his last annual report, tells the country has cost $2,146,255.

I do not comprehend the logic which makes it too expensive to provide for the common defences in the Gulf of Mexico, the most vital part in our whole system, when it has been by no means too expensive to provide defences for the Atlantic. Provide as effectually, or as ineffectually, we care not which, for the common defence of the Gulf as for that of the Atlantic. All we want is justice, even-handed, impartial justice.

According to the Report of the Secretary of War, just presented to Congress, on the subject of fortifications, the amount expended upon the army and navy, exclusive of dock yards, in providing for the common defence since 1816, has amounted to upwards of seventy-five millions of dollars. How much of this has been expended upon gulf defences, or for the benefit of the people whom I address? Precious little. We all know the Atlantic states have enjoyed a double benefit; 1st, of having the works in them; and secondly, of drawing the money for them from the South and West, and spending it in the North and East.

To me, gentlemen, it is immaterial whether a proper naval establishment at Memphis will cost one or twenty millions of dollars to found it. Let us have it, I say, if it be necessary. If the country

want it, and if great interests of state demand it, shall a nation like this expose itself to injury and insult because it cannot afford to supply the necessary means of defence to any part of it? Let us have an establishment there worthy of its object, and of the people whose purposes it is to subserve. It should be the pride and the boast of the entire Mississippi valley. In times of peace it would stand you in the place of a great university for teaching the higher branches of many of the mechanic arts to your young men.

The workshops connected with such an establishment would be filled with apprentices whom the government pays while they are learning their trade.

These workshops would draw to your section of country many of the most skilful mechanics. They would stimulate the industrial pursuits of that region, and assist in the development of its mineral resources. These are some of the advantages which such establishments carry along with them in peace, and make their presence so greatly to be desired along the Atlantic borders.

You have assembled to plan foundations for your future commerce; to provide the means for defending that commerce, appears to me to be intimately and necessarily connected with the subject of your deliberations. Hence the reason for calling your attention to a suitable naval establishment at Memphis.

VIII. The free navigation of the Amazon is the greatest commercial boon that the people of the South and West—indeed, that the people of the United States can crave. That river-basin is but a continuation of the Mississippi valley. The Mississippi takes its rise near the parallel of 50° north latitude, where the climates are suited to the growth of barley, wheat, and the hardy cereal grains. The river runs south, crossing parallels of latitude, and changing with every mile its climate, and the character or quality of the great agricultural staples which are produced on its banks.

Having left behind it the regions for peltries, wheat and corn; for hemp and tobacco; for pulse, apples, whiskey, oil and cotton; and having crossed the pastoral lands for hogs, horses and cattle, it reaches, near the latitude of 30°, the northern verge of the sugar cane.

Thence expanding out into the gulf, with all these staples upon its bosom, to be exchanged for the produce of other climes and latitudes, it passes on to Key West and the Tortugas; and there, at that commercial gateway to the ocean, which opens out upon the Tropic of Cancer, it delivers up to the winds and the waves of the sea for the distant markets, the fruits of its teeming soil and multitudinous climes.

Then comes in the great valley of the Amazon: taking up the agricultural produce and staples which the Mississippi had just reached, and pushing the variety beyond the equator, it increases, and far down into the other hemisphere diversifies the wonderful assortment, until sugar and coffee, rice and indigo, drugs and spices, cocoa and cotton, cochineal and tobacco, india rubber, dye woods,

peltries, flax and wool, gums, various ornamental woods, mines of silver, gold and precious stones, of new varieties, kinds and virtues, have been reached, and added to the list of countless treasures, boundless commercial capacities, and dazzling resources, of these two magnificent water-sheds.

Save and except tea, which is the only article of commerce that is gathered from the field, the forest or the mine, that is not to be found in one or the other of these two river basins, everything that is grown or cultivated upon the face of the earth is to be found in equal, if not in greater perfection and abundance, in one or the other of these valleys, than in any other part of the world.

One of these is in the rear of New-Orleans—the other, in its front. It is for this Convention to say whether these two rivers shall be united in the bonds of commerce or not.

The Amazon, with its tributaries, is said to afford an inland navigation, up and down, of not less than 70,000 miles. The country drained by that river, and the water-courses connected with it, is more than half as large as Europe, and it is thought to contain nearly as much arable land within it as is to be found on that continent. It has resources enough to maintain a population of hundreds of millions of souls.

The navigation on that river is at present such, that the people of the upper country can make but one trip in the year. They have there, in their delightful climate of an everlasting spring, the calm season and the trade-wind season. The trade-winds blow up the river. In the calm season, the natives, in their rude bungaloes, loaded with the produce of the upper country, drift down with the current. Arrived with their stuff at Para, they sell almost for dollars what they got for cents at the place of production.

Having completed the business of the season, they wait for the S. E. trade-winds to set in; with them they return, and complete the business and the trading for the year.

To afford the Convention an idea of the business carried on, by sea, with Para, I quote returns of exports for the year ending Dec. 31st, 1850, which Mr. Norris, the American Consul for that port, has had the kindness to furnish me:

EXPORTS FROM THE PORT OF PARA FOR THE YEAR ENDING DEC. 31, 1850.

	Spice	Sarsaparilla	Annatto	Tapioca	Cleaned Rice	Cocoa	Balsam Copaiva	Cotton	India Rubber	Isinglass
	Arrobas	Arrobas	Arrobas	Alqueires	Arrobas	Arrobas	Canada	Arrobas	Arrobas	Arrobas
To the United States ..		58	1638	3254	3990	28,479	1130	.....	50,069	
Total Export.....	1633	4558	6655	7595	82,606	283,753	1837	3132	79,335	834

	Nuts	Rice in Husk	Tonka Beans	India Rubber Shoes	Sugar	Dry Hides	Green Hides	Grass Rope	Guarana
	Algueires	Algueires	Arrobas	Pairs	Arrobas	No.	No.	Inches	Arrobas
To the United States.....	21,889		74	143,247		11,581	10,196		
Total Export.....	47,528	63,676	92	240,999	9551	26,463	12,670	5581	93

This is a growing business.

A friend who has crossed the Andes, and is now on his way home, down the Amazon, informs me that parts of the Puna country, of Peru and Bolivia, and in which the waters of the Amazon take their rise, are already over-populated; that portions of the Amazonian water-shed, over which he had passed, are "rich in flocks of sheep; and all that is wanted is a close market (which the free navigation of the Amazon would give) to induce the shepherds to raise millions." No other part of the world grows wool like this. It is peculiar.

He reports fine sugar and coffee plantations there, with cotton growing wild; also, there are cinnamon groves, and forests of the tree from which the Peruvian bark, which affords quinine and physic to the world, is taken; and being put on the back of these sheep and asses, is transported from the head navigable waters of the Amazon, 600 miles, among the clouds and snow-capped mountain-ranges, to the Pacific.

It now goes west, and when it arrives at the seaport town of Arica, it is worth, annually, half a million. With the right to send an American steamboat up the Amazon, all this stuff would come east and flow down that river.

With the free navigation of the Amazon, a steamer might load at St. Louis with the produce of those high latitudes, and deliver its cargo right at the foot of the Andes, where the Amazon leaps down from the mountain into the plains below. With a portage easy to overcome by the hand of improvement, she could then ascend the steppes of the Andes, travel several hundred miles farther up, and deliver her cargo within hail of Cuzco and the mines of Peru.

The free navigation of that river is included, I conceive, among the subjects, with regard to which the committee has invited me to express my views to the Convention; and I hope the Convention will deem it not unworthy of their careful consideration.

Considering the softness of its climates, the fertility of its soils, and the lavish hand with which nature stands ready to fill for the husbandman the horn of plenty there; and when man is thus surrounded, considering that his industrial energies are for the most part addressed to the tillage of the earth; and considering, moreover, the character of the people who inhabit that valley of the South, and the character of the people who inhabit this of the North; we are struck with the fact—and it is a physical fact—that the valley of the Ama-

zon is but a commercial appendage of the Mississippi; and that it rests with us and the course of policy which we may pursue, whether this physical fact shall be converted into a practical one; and whether the South will suffer the geographical advantages of its position with regard to that region to go by default, as it has similar advantages in other cases.

Attention to this subject cannot be given too soon, or too earnestly.

Its importance is great. Legions of benefits and advantages are to flow from it; many of them are palpable and obvious; some are dim in the mists of the future; but all of them are certain. In short, as a commercial matter, the free navigation of the Amazon is the question of the age. As time and use shall develop its bearings, our children will weigh the effects upon the prosperity of the country, of the free navigation of the Amazon with the acquisition of Louisiana. They will place them in the balance together to contrast and compare them; and on considering the effects of each, they will dispute and wrangle as to which of the two has proved the greater blessing to their country.

I inclose, herewith, a pamphlet, entitled "Commercial Conventions —Direct Trade, &c.," in which the subject of steam communications with the *mouth* of the Amazon, but no further, is treated.*

The question which I propose for the especial consideration of the Convention, relates to the free navigation of the Amazon itself—to the right of the people of the United States to send their steamboats to that river, to ply up and down it, as they do upon the waters of their own Mississippi, and to buy, sell, and get gain on the banks thereof.

Commerce, so far as climate and soil are concerned in ministering to its wants and in imparting health and activity to its influences, is based upon an exchange of the produce of one latitude for the produce of another, and for this simple reason: that the planter who grows sugar in Louisiana, does not wish to exchange it for Brazil or any other sugar. He may exchange it for Brazil coffee, or for Brazil anything else that is *not* sugar.

For this reason, Europe, for hundreds of years past, has been struggling for the commerce "of the East;" and for no other reason, than that latitudes and climates, and consequently wants and produce, that are not to be found or satisfied in Europe, abound in "the East."

In a commercial sense, the valleys that are drained by the "father of waters," and the "king of rivers," as the Amazon is called, are complements of each other. What one lacks, the other supplies. Together, they furnish all those products and staples which complete the list of articles in the circle of commerce.

The right of our people to go with their Mississippi steamers into

* This paper was published in our February number.—Ed.

the Amazon, will, when exercised, draw emigrants to that valley, who, being there, will become our customers; and as soon as the proper impulse is given to their commerce and their industrial pursuits, we shall find there at our doors, instead of away on the other side of the world, all the productions of "the East." In short, "the East," in one sense, will be brought within eight or ten days' sail of New-Orleans, instead of being removed to the distance of four or five months off, as it now is.

Several nations, as Bolivia, Peru, Ecuador, and Brazil, are the owners of the Amazon and its navigable tributaries.

Brazil is the principal owner. All the lower Amazon is hers; and she has given none of the upper countries as yet the right of way through it to and from the sea.

The question then is, do the people who are represented in this Convention set any value upon the right to steam and trade up and down the navigable streams of that magnificent water-shed? At present the country is for the most part a wilderness of howling monkeys and noisy parrots; its boundaries are fringed with settlements; but only here and there, when you leave the outskirts of the valley and begin to penetrate into the interior, are the traces of civilized man to be found.

To obtain this right is the work of diplomacy. But the states and people who have been invited to this Convention, may, by their action, influence that diplomacy.

Brazil may be invited to give the free navigation of this river away as a boon to civilization, and make it common to the world. But it is not to be supposed that Brazil will part with such a jewel without a consideration.

Shall it be bought with a sum of money? Or shall the free navigation of the Mississippi be offered to Brazil in exchange for the free navigation of the Amazon?

By our own laws, an English vessel, or the vessel of any other nation at peace with us, is as free to sail up the Mississippi River, land and take in a cargo at St. Louis, and to come down again, as she is to go up the Chesapeake Bay to Baltimore, or the Delaware to Philadelphia.

But do such foreign vessels go up to St. Louis? No. Why? Because, when they arrive at New-Orleans with their cargoes of foreign merchandise, which they have brought across the seas, they find it cheaper to send it up in one of our river-boats, than to take it up themselves; and, therefore, though foreign vessels, by our own laws, may go up and come down, yet the free navigation of the Mississippi, to this extent, has proved of no practical value to any of them. Would they go up farther if they could?

Still the time was, when the free navigation of the Mississippi River was a question of deep and absorbing political interest to us; and we may infer, therefore, that the diplomatist of the country would act, when the proper time comes, with more confidence touching the offer to Brazil of the free navigation of the Mississippi for that of the Ama-

zon, after having learned the opinion and wishes upon the subject, of the people of the Mississippi valley.

Admitted upon the Amazon with their boats, our people would desire to participate there in what is called with us "the river trade;" for considering that the habits of the Amazonians are not at all aquatic, it is not by any means probable, that Brazilian enterprise would be sufficient to supply the boats and boatmen requisite for this river trade. She cannot do it now.

But are we prepared to let Brazilian capital, and Brazilian subjects, compete with our own people for the business—the river trade—of our own Mississippi waters? We should ask nothing of Brazil which we are not willing to render to Brazil. Are we prepared, therefore, to offer to admit Brazilian subjects to an equal participation with our own citizens, of the trade of the Mississippi River, on condition that she will admit our citizens to an equal participation with her own subjects in the river-trade of the Amazon and its tributaries?

That is the question as to which I desire to draw an expression of opinion from the Convention, because I believe that that opinion, being regarded as the opinion of the people of the Mississippi valley, would have a bearing upon the subject, as one of a practical nature, and of paramount importance.

Suppose that the United States should declare, that the citizens and subjects of all nations should have the same rights to build and launch boats on the Mississippi River that our people have; that the right to take freight from one landing or town to another, and to trade up and down the river, should be as perfect and as complete to the foreigner of whatever nation, as it is to the American citizen—what would be the effect?

Such a surrendering of the "coasting trade," as the river-trade may be properly called, might possibly induce a few foreigners to send over their capital and build boats. But these boats, to compete with our own boats, would have to be manned by our own watermen—officered by our own people. And such a law, therefore, might interfere with American owners.

But, instead of such a privilege being offered to *all* nations, suppose it were offered only to Brazil, in exchange for like privileges to our own citizens upon her rivers—what would be the result then?

Why, this: Brazil has not even the energy among her own subjects to put boats upon her own rivers, where they have the monopoly of trade and navigation; much less would her subjects have the enterprise to come here and put boats upon the Mississippi, to run in competition with our own. On the other hand, we, who have the enterprise, the energy, the skill in boat-building, would, with the knowledge, over all the world, which we have in steamboat river-navigation, go to the Amazon, and enjoy there something like a practical monopoly. For it is not to be supposed that, if we offer to divide our Mississippi River trade with her subjects, on condition that she will make a like division to us of her Amazonian trade—it is not, such being the conditions, to be supposed, I say, that any other nation would on either side be admitted into the arrangement.

There is but one Mississippi River, and but one Amazon, in the world; and there is no equivalent for the free navigation of the one, but the free navigation of the other. Therefore, no nation on the earth can buy and sell a commercial jewel of such value.

The question, thus narrowed down, is simply this:—In enlarging and extending the foundations of the commercial system, which is to make of the United States the greatest nation the world ever saw, and of the Mississippi valley the heart and centre of it,—are you willing to give the free navigation of this river for that of the Amazon?

The subject of the free navigation of the Amazon and its tributaries, is a vast one. I have barely touched it. Nor is it necessary for me to attempt a discussion of it: do it justice, I could not. To go into the merits of it, either with the committee, or before the Convention in whose behalf I have been drawn into the subject, I have not the time; and if the time, not the abilities. I merely wished to put the question, and to subscribe myself, gentlemen of the committee, a man of the Southwest, and one who, having the interests of his country greatly at heart, is, with his feeble power, at the service of the committee and of the Convention in all things for good.

Respectfully, &c.,

M. F. Maury, Lt. U. S. Navy.

Committee S. W. R. R. Convention,
New Orleans.

ART. V.—THE GULF TRADE.

I have to acknowledge the receipt of your letter inviting me to "address the South-western Rail-road Convention" to be held in your city on the first Monday of January next, "or to prepare a report to be read before the Convention, and placed among its documents."

I regret that protracted absence at the capital of this state, has delayed the reception of your letter until this time, and thus rendered it impracticable to comply with either of your requests.

I cannot, however, omit the occasion to express, although in a hurried manner, the great satisfaction I experience in witnessing the efforts now being made to rouse our section of the confederacy from that fatal indifference to works of public improvement which has too long characterized it.

It is, however, a very great mistake, although not an uncommon one, to suppose that our people lack either industry or energy. Witness the numerous states of our portion of the Union, whose native forests, in an almost incredibly brief period, have been forced to yield to the civilization of the husbandman, and whose borders yet ring with the unceasing echo of the axe.

It is in this keen pursuit of individual gain, (heretofore so large,) that our people have lost sight of the advantages to be derived from those

great works of intercommunication, which, from their diffusion of benefits, are termed "public improvements."

The assemblage of the "South-western Convention" must be regarded as an important step in this spirit of progression; and I sincerely trust will prove the harbinger of that day, whose fullness will bestow wealth, power, and true independence, upon our most highly-favored portion of the confederacy.

Permit me, gentlemen, to say a few words in an informal manner, as to our cities, New-Orleans and Mobile; trusting that the interests they represent are so extended, that a reference to these localities will not be considered invidious.

New-Orleans, your own great city, has been slow to move; and is perhaps justly responsible for much of that indifference to "public improvements," the existence of which is now so sorely felt. There she sits, contentedly enthroned upon the great Delta of the Mississippi, an appropriate representative of Fortune, while the god of rivers pours into her lap the treasures of his immense dominions.

Mobile, on the other hand, not so bountifully endowed, and possessing much more limited resources, was naturally the first to feel the effects of that successful rivalry, which limited them still more, and was consequently the first to institute a great chain of improvement, connecting with the gulf the waters of the northern lakes; thus demonstrating that there is an awakened energy in our own region, which will at least make a *determined effort* in the right direction.

It gives me sincere pleasure, while upon this subject, to say, what I have no doubt the Convention will be pleased to learn, that recent events, not necessary here to be detailed, have removed the last doubt as to the completion of that great work in which our citizens have taken so active a part; and that in perhaps *less than a twelvemonth, the entire road from Mobile to Lake Michigan will be placed under contract.*

As between these cities, this should excite no jealousy; the kindly feeling which has characterized their past intercourse, should be still further strengthened by this great work, with which *both* should be identified. In the struggle for commercial ascendency, which is daily becoming more and more severe, New-Orleans and Mobile stand together against the mighty efforts of the Atlantic ports to seize upon the commerce which geographically belong to the gulf cities.

It is in this point of view that I regard this great road, traversing so many degrees of latitude, and embracing such a variety of products, *as the first great counter-move* in favor of the gulf, securing to her cities an immense traffic, which would otherwise find an outlet upon the Atlantic. Its magnitude can only be estimated by considering what in a few years must be the population of the valley of the Mississippi. Who that has the slightest appreciation of the future, will deny that the gulf, the natural outlet of so much of its vast productions, will rear upon its borders two cities of the first magnitude? Their proximity, surely, constitutes no valid objection. It is much less than that of New-York and Philadelphia; and we are

living witnesses to the fact that they advance to greatness with giant strides, and with equal step.

If, therefore, we prove worthy of our destiny, why, let me ask, may not New-York and Philadelphia be repeated on the margin of the Gulf of Mexico?

The great design which took its origin with your citizens, and which in my humble judgment challenges in the *highest degree* their attention, the connection with the Pacific by the Isthmus of Tehuantepec, will, if successfully pursued, reflect immortal honor upon its projectors, and confer incalculable advantages not only upon your own city, but upon the whole region of country with which she is connected. A work so full of promise, and commenced under such auspices, should not be permitted to stop. Neither cold indifference, nor secret hostility, proceeding from quarters however powerful, should be allowed to obtrude themselves between your rights and the protection of the government, which is bound to guaranty them. Believing, therefore, you will receive that governmental support to which you are justly entitled, I cannot doubt that the day is near at hand when the Gulf and the Pacific will be thus united, and Tehuantepec become a great highway for the nations.

There is another subject, kindred to this, and to which I would briefly, through you, call the attention of the Convention: it is the construction of a ship canal across the state of Florida, from Cedar Keys to the St. Johns, or at any point more suitable.

The practicability of this work, I assert, upon the authority of some of the most eminent engineers in this country—and its utility, is so self-evident, and rests upon so broad a basis, that I would not be justified in consuming time for the purpose of sustaining it.

We all know that the chief inducement now held out, to deprive the gulf market of its commerce, is the delay, expense, and danger, of navigating the Cape of Florida—the truth of all which is beyond doubt or contradiction. The loss which is incurred by the dangers of this navigation would, in a few years, compensate the cost of such a work.

Every motive, therefore, which could address itself to those who are interested in the navigation of the gulf, comes in the most imposing form to urge this subject upon the public mind.

It is wonderful that, suffering under the burthens so long imposed upon our commerce by these difficulties, so interesting a question as this should have slumbered until this day, without that scientific investigation which its vast importance merits.

This route would not only save the immense contribution now levied upon our commerce, but would also greatly modify the political aspect of the Cuba question, giving a transit for much of our own commerce over our own territory, and greatly strengthening our confederacy in its military defences.

Impressed by the great importance of this work, I took occasion to bring the subject before an internal improvement convention, held in this city in May last, and which adopted a resolution, expressive of the opinion favorable to its practicability and great value. Acting

under the same impressions now, believing that it is a work which in every point of view is of the highest importance to the confederacy, and that it is within the powers of Congress to execute, I ask leave, through you, to present the following resolutions for the adoption of the Convention :

Resolved, That the interests of all the states bordering on the Gulf of Mexico, as well as of those states whose productions find an outlet therein, are deeply involved in the inquiry, whether the expense, delay and danger, which now burthen the commerce of the gulf in the navigation of the Cape of Florida, may not be avoided by a ship canal across that state.

Resolved, That the representatives of the states interested, now assembled at Washington, be requested to urge this question upon Congress at its present session; and if the proper departments are not now ready to give the work such an approbation as to justify Congress, with the consent of the state of Florida, at once to undertake the work—then that these representatives be requested to take such action as will cause a full and accurate survey to be made, so that the necessary information may, at the earliest practicable time, be given to the government and the country.

Resolved, That copies of these resolutions be forwarded to the members of Congress, and that copies also be immediately forwarded to the state legislatures, now in session, requesting their aid in bringing this matter fully before the Congress of the United States.

Regretting that circumstances prevent any other return to your kind invitation than these hastily-penned remarks, allow me, gentlemen, to wish you the fullest success in the patriotic movement now being made by you.

With sentiments of great respect,

I remain your obedient servant,

P. PHILLIPS.

To Messrs. BURKE, DE BOW, &c.

Mobile, 31*st December*, 1851.

ART. VI.—INTERNAL IMPROVEMENTS BY GOVERNMENT—PACIFIC RAIL-ROAD.

I HAVE received your letter, inviting me to attend the Rail-road Convention which is to meet in New-Orleans on the first Monday in January next. It will not be in my power to attend. Official duties oblige me at that time to be at my post at Washington.

But I send you three reports in reference to the trade of the lakes and western rivers, which may be of service to your deliberations.*

Allow me to draw your attention to a few of the facts of these reports.

The system of harbor and river improvements may be considered as having been commenced in 1806, and as having been continued without interruption, up to, and including the year 1845; and, by reference to the table, page 24, report No. 1, it will be perceived

* These reports were made by Col. Abert, of the dates December, 1846, January, 1848, May, 1850.

that the whole appropriations on these accounts are not more than about seventeen millions of dollars.

A second table, on the same page of the same report, exhibits the years through which this amount has been distributed. The first table on the same page names the states in which the expenditures were made; and previous pages of the same report name the particular work which was the object of expenditure. The facts of this report will remove all that class of objections to the system, which depend upon the supposition, that the system has been for the exclusive benefit of a few localities, and of that class of objections in which so much imagination has been indulged, in reference to the amount expended.

GOVERNMENT APPROPRIATIONS FOR INTERNAL IMPROVEMENTS.

States and Territories.	Amount.	States and Territories.	Amount.
Maine	$276,574 72	Mississippi	$46,500 00
New-Hampshire	10,000 00	Louisiana	717,200 00
Massachusetts	526,148 22	Tennessee	11,920 00
Vermont	101,000 00	Kentucky and Tennessee	155,000 00
Rhode Island	32,000 00	Arkansas	486,065 00
Connecticut	160,407 26	Missouri and Arkansas	100,000 00
New-York	1,632,115 80	Missouri	75,000 00
New-Jersey	28,963 00	States through which the western rivers pass, (the Ohio, Mississippi, Missouri, and Arkansas)	1,698,000 00
Pennsylvania	207,981 23		
Pennsylvania and Delaware	38,413 00		
Delaware	2,038,356 00		
Maryland, Pennsylvania, and Virginia	1,901,227 81	Indiana	1,270,733 59
Maryland	55,000 00	Illinois	993,601 00
Virginia	25,000 00	Ohio	2,617,661 37
North Carolina	370,377 00	Michigan	645,724 83
Georgia	243,043 06	Wisconsin Territory	167,500 00
Florida	287,712 72	Iowa Territory	75,000 00
Alabama	204,997 60		17,199,223 21

AMOUNTS APPROPRIATED IN EACH YEAR.

Year.	Amount.	Year.	Amount.
1806	$48,400 00	1831	$926,311 84
1810	60,000 00	1832	1,225,008 43
1811	50,000 00	1833	1,159,451 82
1812	30,800 00	1834	1,641,621 52
1815	100,000 00	1835	1,352,243 61
1816	10,000 00	1836	1,837,520 31
1817	4,000 00	1837	1,768,218 63
1818	317,989 60	1838*	2,087,044 16
1823	32,920 00	1839	60,500 00
1824	175,000 00	1841	75,000 00
1825	176,712 00	1842	100,000 00
1826	284,253 00	1843	230,000 00
1827	398,541 45	1844	696,500 00
1828	1,020,120 56	1845	50,000 00
1829	608,560 25		
1830	672,506 03		17,199,223 21

BUREAU CORPS OF TOPOGRAPHICAL ENGINEERS,
December 26, 1846.

J. J. ABERT,
Col. Corps of Topographical Engineers.

* The appropriation law of 1838 directed that but a portion (not exceeding one-half) of amounts appropriated should be expended in that year.

It will appear that these expenditures have been diffused over nearly every state; not to the same amount in each, because, as must be evident to every reflecting mind, it is not every state which has, within its limits, harbors or rivers which require improvement, or which admit of being improved. But every state must experience the benefit of improved harbors and rivers of an adjoining state.

Much misconception has arisen in reference to amounts which have been appropriated for these harbors and rivers. Allow me to call your attention to page 25 of the report, marked No. 2. It is there stated, that the whole amounts appropriated (from 1806 to 1845) are,

For lake harbors	$2,790,500
For the western rivers	2,758,800

By which it will be perceived, that the whole amount appropriated and expended on these two interesting and important parts of the system, does not exceed $5,549,300.

These facts are adapted to dissipate many erroneous impressions, and to correct many errors.

Now, if it be desirable to know how the balance of the seventeen millions over and above the amount for lake harbors and for western rivers has been expended, the information will be found in the report marked No. 1.

By referring to the facts of the report marked No. 3, it will be perceived that

The nett commerce of the lakes was, for 1848	$93,242,633
And for the western rivers, for the year 1849	256,233,820

As the "exports" of one place are presumed to be the "imports" of another, the "nett commerce" is taken to be one half of "exports and imports." These latter constituting what may be called the "gross commerce," which last would be double the amounts stated.

This idea is not rigidly correct. Without doubt, the "nett commerce" is more than half of the "gross commerce." But yet it was considered the safe rule to adopt. Reasoning upon such a subject, to obtain credit, should exhibit the desire of avoiding exaggeration, or of assuming conjecture as a basis of the reasoning.

The passenger trade on the lakes, (see page 5 of the report No. 3,) can be stated for the year 1849, at, passengers	356,000
And, supposing the passengers to have a direct relation to tonnage and amount of trade, the passenger trade on the western waters may be safely stated, for the same year, at, passengers	1,500,000

From these facts can be inferred sound reasons why so many rail-roads are well supported, and why so many are required, as, without this immense internal trade, and the consequent number of passengers, these rail-roads would be without support.

It is considered that the lake trade alone has made necessary the rail-road from Buffalo to Albany; the rail-road from Dunkirk to New-York; the rail-road from Albany to Boston, and the rail-road from Albany to New-York. The various branches to these great roads, derive their chief support from the same causes, the vast amount of internal trade and the passenger trade which it generates. The same reasoning and causes are applicable to the southern rail-roads. How few of these would exist, if local patronage were their sole support.

We are indebted to Europe for many of the most useful mechanic arts; but Europe is indebted to us for the great moral mechanics which best develop the energies and resources of a people, and which bring into profitable activity the industry and capacity of every member of the great body politic.

Referring effects to adequate and palpable causes, I believe it is to be demonstrated, that this rapid and immense development of internal trade, this better than the mines of California, diffusing employment, wealth and happiness throughout our vastly extended country, is owing chiefly to the very limited patronage which has, as yet, been extended by the general government to our Lake Harbor and Western River improvements. This patronage has populated those regions, and has thrown a vast amount of wild land into useful cultivation. Because it has furnished the means by which the products of the soil can find a market, exempt from consuming charges of transportation, and in return by increasing the means, has increased the wants of the cultivator and his ability to supply them.

The propriety of any particular rail-road project is to be decided by reference to this great trade, in the benefits of which it will participate; and there can hardly be a project of a road, which shall form a link in the connection between the western rivers, or the lake harbors and the Atlantic, which will not partake of these as well as of local benefits.

But it appears to me that this great chain will be incomplete, and its benefits be but partially enjoyed, unless the connection be formed between the Mississippi and the Pacific. Of the rail-road to insure this connection, I have written several letters, but probably the last is all that you would desire to read. I send a copy of this.

It appears to me that such a road, connecting with the Mississippi at some point so far south as to be exempt from interruption from ice, would make New-Orleans the great emporium for the Pacific trade.

The connection between the Mississippi end of the road and New-Orleans, as well as with other points on that river, would probably be best accomplished by steamboat. And by means of this river and the Ohio, there is no town on the shores of either which would not derive benefit from the road. Then by the lakes, by rail-roads, and by canals, links already exist to complete the connection inland with the Atlantic.

The subject is a vast one. It fills the imagination; and unless I am much mistaken, it would also fill the pockets of our people.

The various Isthmus routes with the Pacific have occupied much attention. Allow me to send an interesting printed letter on this subject, from Brevet Colonel Hughes, of the Corps.*

But these several routes have always appeared to me open to serious objections.

1st. From the time they require.

2d. From interruptions in the continuity of the voyage, by frequent changes from land to sea, and the consequent different modes of transportation.

3d. They would of necessity become prolific sources of maritime wars, and of consequent interruptions in the trade.

4th. They are out of our jurisdiction and control.

5th. The money required in the construction of parts would be for the benefit of a foreign people and of foreign soil.

6th. In all suspensions of the trade from war or other durable cause, the inland parts would necessarily become dilapidated or destroyed; and when these causes of interruption had subsided, there is no telling how much time and how much money would be required to restore the way to use, and to bring commerce back again to these channels, which the interruption had forced to be changed.

7th. Expenses on these routes must necessarily be great.

8th. The armed fleets which the protection of the commerce on these routes would require, would involve most serious national expenses. The nation could better afford to give half the cost of a continuous rail-road from the Mississippi.

A war of one year, with its cost, and consequent losses of all kinds—a war resulting from circumstances necessarily attending any one of these Isthmus routes, would probably amount to more than the making of the entire road from the Mississippi.

These Isthmus routes are good temporary expedients; but the durable and really valuable route is, in my opinion, to be found only in a continuous rail-road route from the Mississippi to the Pacific within our own jurisdiction.

Respectfully, sir, your obedient servant,

J. J. ABERT,
Col. Corps Top. Engineers.

GLENDY BURKE, Esq.,
Chairman, &c., &c., New-Orleans.

---

* Annexed.

SOUTHERN RAIL-ROAD TO THE PACIFIC.

BUREAU OF TOPOG. ENG., WASHINGTON, Jan. 25, 1851.

DEAR SIR: I have at last been able to have those letters copied, about the road, and now send them to you. In reference to probable cost, recent information induces me to believe, that a road from the Mississippi to the Rio Grande, passing at the head of sea-navigation of all the principal rivers of Texas which communicate with the gulf, could be made for less than I formerly supposed.

If we take this distance at 850 miles, and the average cost of each mile, to make the rail-road complete, and bring it into use, at $40,000 the mile, it will make the cost of that part of the road $34,000,000.

If this part alone of the road was made, it would command all the travel. For, from the Rio Grande to San Diego, is a frontier line of the United States, on which military posts will have to be established, and roads connecting with these posts will have to be made, which will make that route passable and safe, and will occasion it gradually to become settled, and sooner or later to be turned into a rail-road. But we will suppose the whole to be a rail-road, and endeavor to estimate its probable cost and probable profits.

From the Paso to San Diego on the Pacific, is about 850 miles. If it be supposed that this part of the route will cost 50 per cent. more than the average cost per mile from the Mississippi to Paso, it will make the average of this part of the road $60,000 the mile, and bring the total cost of these 850 miles to $51,000,000. Then the whole road will cost as follows:

850 miles from the Mississippi to Paso,.....	$34,000,000
850 miles from Paso to San Diego,.....	51,000,000
Total,	$85,000,000

Twelve per cent. upon such an outlay would require an income of $10,200,000. This would be a gross income, out of which all expenses for repairs, attendance, &c., &c., &c. would have to be taken. Taking these at half the gross income, it would leave $5,100,000 to be divided, in order to yield an income upon the stock of 6 per cent. per annum.

The question now occurs, from what sources will this road derive such an income? We will consider two sources only—travelers and freight.

1*st. Travelers.*—In my letter of the 24th September, 1849, I take these at 50 each way per day, for 350 days, and at a charge of $68 for a through passage.

An extremely judicious friend, who has given much attention to these matters, says, that I am seriously wrong in both these items—seriously below the reality in reference to the number of travelers, and equally below what would be considered a cheap charge for the distance.

In his opinion 100 passengers, each way, would yet be much below the reality, and $150 for each passenger vastly below what each has now to pay. And at these rates, and with the time saved, the road would, without doubt, command the travel of the world from the Atlantic to the Pacific. Taking these rates, the income from passengers would be $10,500,000.

2*d. Freight.*—The same friend has remarked, that the road should be viewed in reference to the commerce it would generate and command, and not in reference to any profit from freight. That, except for passengers, it should be a free road, making no charge for freight, thereby enabling it to command the commerce of the world with the Pacific; and from this mo-

nopoly of commerce, vastly more wealth would be secured to the country, than could possibly be from any profit by a charge of freight and a consequently restricted commerce.

Freight is unquestionably a serious tax upon commerce; and the more freights are reduced, the more profitable commerce must be, and the more extensive its range. But the argument of my friend is, I think, in a case like this pushed to an extreme; and, in my opinion, the whole commerce between the Atlantic and Pacific may be monopolized and commanded by a moderate freight charge, making it vastly the cheaper of any route.

It is considered a good passage from New-York to San Francisco, by Cape Horn, if it occupy no more than 5 months, or 150 days. Now, by the rail-road route, as exhibited in my letter of the 24th September, 1849, a passenger train would move over this distance, at a rate of 20 miles the hour, in 11 days; and to San Diego in 8 days. At 15 miles the hour, it would require to San Francisco, 13 days; to San Diego, 10 days. And at the slow rate of 10 miles the hour, the time to reach San Francisco would be 17 days; to San Diego, 14 days.

Take any of these rates, and compare them with the 150 days of the usual sea voyage, and the difference is so vastly in favor of the road, as to ensure to it the monopoly of the whole trade. The point then to be guarded against is, not to destroy this decided and important advantage in time by an exorbitant freight charge.

Suppose, then, that no higher freight were charged on the road, than is charged on the sea-voyage; then, the moneyed charge would be the same on the road as on the sea-voyage, and all the difference of time would be gained by the shipper, a difference so vastly in his favor, that it must prevent all shipments by sea, and insure the whole trade to the road; and not only is there this difference in time in favor of the road, but the difference of interest upon the freight saved by time to the shipper, which would frequently be more than equivalent to the road-freight charge, and make the rail-road tantamount to a free road.

These considerations fulfil all the conditions of my friend's reasoning, in reference to the advantages of a free road, and yet justify a charge for wear, tear, and repairs, and for freight trains.

The average shipping freight charge is $25* the tun, which, on 150,000 tuns, would yield $3,750,000.

By the passenger trade we have.....	$10,500,000
And by the freight, as above,.....	3,750,000
Making a total of	$14,250,000

But the income required to insure 6 per cent. upon the stock (after paying all annual expenses) is $10,200,000: we have therefore from these two considerations (passengers and freight) an excess of four millions, which would justify a reduction of the charge per passenger to $100 each; or it will justify a serious reduction of our supposition in reference to amount of freight trade.

Respectfully,

J. J. ABERT,
Col. Corps. T. E.

Hon. V. E. HOWARD,
House of Representatives.

---

* With very fast sailing vessels, as high as $40 the tun has been paid.

RED AND MISSISSIPPI RIVERS RAIL-ROAD.

WASHINGTON, D. C., *November* 30, 1850.

SIR:—Having been engaged by you, under the appropriation for the "survey of routes from the valley of the Mississippi River to the Pacific Ocean," to examine so much of the route as lies between the lower Mississippi, in Louisiana, and the Great Bend of Red River, in Arkansas, and having completed the work, I have now the honor to report:

Early in April I left Washington for the work, and on arriving at Louisville with my principal assistants, Messrs. J. K. Ford and S. Thayer Abert, proceeded to procure the equipment for the survey there. The floods of the Mississippi at that time covering the whole bottom land, it became impracticable to commence the survey at that extremity of the line, as originally intended; and, with your assent, I concluded to begin at the other end and work eastward. The party was accordingly dispatched to Fulton, by the way of the Red River, near which point I joined them, having taken my route by the way of the Arkansas River and the road from Little Rock to Washington, in Arkansas.

The party had been at work a week when I joined them, from which time I continued in direction of the work.

The country traversed between the Red River and the Washita is hilly. Between the Washita and the Mississippi level it may be described more particularly thus: At Fulton the Red River is about eight hundred feet wide, with banks about as high as the level of high water, and presenting no obstacle to bridging. The course of the river is at first south, and afterwards east.

At about a quarter of a mile back from the margin of the river the ground rises abruptly twenty-five feet to a table-land, which continues to the Bois d'Arc (or Boclock) river, about eight miles, as we ran obliquely down the Red River valley.

This stream runs southerly, and enters the Red River about ten miles below Fulton. Beyond the Bois d'Arc the country is hilly, with frequent appearances of rock. The Bodcom and Dorcheat are two other streams running southerly into the Red River; the first of which we cross at twenty, the last at forty miles from Fulton, as we ran; and these are the last Upper Red River streams which we meet.

After these there are two other streams, running eastwardly towards the Washita—the D'Arbonne on the south, or our right, and the Smacovert on the north, or our left. Presently the D'Arbonne inclines to the southeast, and the heads of another stream appear—the Loutre, which runs southeasterly into the Washita, and of course enters that stream above the D'Arbonne; then comes the Washita, running southerly; and near where we cross it the Bayou Bartholomew enters it, from a general direction of northeast, although for the last three miles of its course it is so bent from its general direction as to enter the Washita from the southeast; the Washita and Bartholomew being both navigable. At this point on the Washita the hilly country, with rock, ends, and the alluvial "bottom" of the Mississippi begins, but at a level of sixty feet above the bed of the Washita. Thence up the bank of the Bayou Bartholomew, the land is above water at all times; and at Bastrop, near where we leave this stream, the country, for four or five miles, is high and undulating.

Two or three miles beyond Bastrop, the hills on which it stands falls off suddenly, at a place called Red Hill, and at the foot of this comes Prairie Mer Rouge, three or four miles across, beyond which, and scarcely below the level of the prairie, the "swamp," or land subject to overflow, appears. Several streams, rivers, bayous, and sloughs, traverse this "swamp," running southerly, and there are occasionally points and ridges above even the highest waters. The names of the chief of these streams are given in the order in which they are met; they are the Gallion and Bonne Idee bayous, the De Hart swale, the Bœuf River, all of which run together into and through the lake and Bayou La Fourche: the Couloirs and Bayou Mason, the last being a navigable stream, coming from above the Arkansas line, and joining the Tensas about eighty miles below, whence they run together into the Washita, at Trinity. Between the Couloirs and the Bayou

Mason is a stretch of land, twelve miles in extent, higher by three or four feet than the swamp, and always above water. This ground is inhabited and cultivated, and, according to the evidence of the well-diggers, has a substratum of rock. It is called the "Mason Hills," and, increasing in height as we proceed eastward, terminates in a bluff on the Bayou Mason. These hills are said to extend north and south many miles, though not at all places above the floods, or continuously above the ordinary swamp, as we found them on our line. Beyond the Bayou Mason the swamp land continues eight and three-quarter miles, to the bank of Lake Providence, formerly a bend of the Mississippi, but now a pretty crescent-shaped lake, with its banks above the highest floods, and beautifully cultivated. Between the Bayou Mason and the lake are several streams running from the lake, the principal of which are Baxter's Bayou, Drew's Bayou, and the Tensas. At the foot of the lake, on the bank of the Mississippi River, stands the town of Lake Providence, the terminus of our work, but the commencement of the southern route from the valley of the Mississippi River to the Pacific Ocean.

I have described the country in the order in which we surveyed it, as it is not an independent work, but the first link of a line to the Pacific. I will discuss the location in the reverse order—that is, beginning at the Mississippi and running westward.

The line run over the ground above described, and the reasons which influenced us in adopting it, may be stated thus:

The proper place for crossing the Washita was assumed to be just below the mouth of Bayou Bartholomew, which is much further south than would be by a straight line drawn from Lake Providence to Fulton; but above that point the river has much bottom land subject to overflow, as is particularly the case near the state line, where, for an extent of sixty miles, there is no landing place from this cause. Besides this, it was an object to avoid an expensive bridge to cross the Bartholomew, which, being a navigable stream, would require a draw. Hence we aimed for the most direct practicable route from Providence to the mouth of the Bartholomew, and thence to Fulton. As my orders required an examination with reference to a rail-road, as well as to a common road, I will discuss the first, on which a detailed estimate has been made, and from which the location and cost of a common road may be deduced.

By much inquiry it was ascertained that the most favorable point for leaving the Mississippi River in that vicinity was at Lake Providence, about seventy miles above Vicksburg, as the Mississippi swamp is here comparatively narrow, and, for a portion of the distance, some elevated land is found. Many emigrants for the southwest pass through Lake Povidence, and the route seems to be generally recognized as a proper one. The town is on the river bank, at the foot of an old bend of the river, now a lake, and is a pleasant place of about five hundred inhabitants. Behind the town is the "swamp," intersected by several bayous, on the elevated margins of which are some fine plantations. The banks of the lake, being above water, have several beautiful residences. No plan is proposed different from those in ordinary use for the depot at the Mississippi terminus.

Suggestions have been made for opening an entrance from the river to the lake, and establishing the depot on its bank; but, although this would give a very excellent basin, difficulties, arising from the great rise and fall of the river, its swift current, and the loose character of the soil forming its banks, will prevent any measure of this kind being attempted without mature reflection. A good wharf-boat, securely moored, with inclined planes reaching from its deck to the level of the ground above, will be sufficient, at least for the beginning. This arrangement is not worse than the simple hoisting, common at many important depots. Sufficient depot accommodation may then be formed on the level of the village, and in its immediate vicinity. From this point we carry the line along the bank of the lake, which runs favorably for three miles; thence into the swamp, which extends to the Bayou Mason, and which is called the "Mason Swamp." Through this swamp several streams flow, which are escapes from the lake: the principal are the Bayous Tensas and Batu. They will be crossed by bridges, as I propose for all the streams, large and small, which run through the swamp; the reasons for which will be given hereafter. Across the Mason Swamp to the Bayou Mason is eight miles and three-quarters, and the height of embank-

meat will vary from five to twelve feet, although there are but few points where it will be so high as that last named.

We cross the Bayou Mason, near the present ferry, by a bridge of one hundred feet span, and abutments forty feet high. The Mason is a stream of considerable magnitude, flowing from Arkansas; and, as it is navigable to and above the place where we propose crossing, the bridge should be provided with a draw. Beyond Bayou Mason, we meet the elevated lands called the "Mason Hills," before spoken of. They form a bluff on the bayou, and extend twelve miles on one course, entirely above the highest water, and therefore requiring little cost for constructing a road over them.

On leaving these hills, we cross the branches of a slough called "the Couloirs," which branches unite at a short distance below our line, forming there a proper bayou. From this point we encounter the swamp again, which continues ten miles and a quarter, crossing the Bœuf River at five miles and a half, and "De Hart's swale" at nine miles, from the Couloirs. The Bœuf River is one hundred feet wide, and the water rises about thirty feet. It is proposed to cross it about half a mile below the present ferry, on the plantation of Mr. Rash. It will require a bridge of one hundred feet span, with abutments thirty-five feet high. This river and the Bayou Mason have regular channels, and the water at its ordinary stage lies far below the banks: in the Mason, it is now twenty feet below the eastern or lowest bank; and in the Bœuf River twenty-one feet. The De Hart swale, on the contrary, is at the bottom of a general depression, extending half a mile towards the west, and one mile and a quarter towards the east. The approaches to this swale require a higher embankment than at any other place through the swamp. It will average from twelve to fifteen feet for a distance of one mile and three-quarters.

A mile and a half beyond the De Hart swale is the Bayou Bonne Idee, the banks of which are above the highest flood. The stretch of swamp last described, from the Couloirs, at the end of the Mason hills, to the Bonne Idee, is called the "Bœuf swamp," as the Bœuf River runs through the middle of it. It is 10¾ miles across, as I mentioned before, and the average height of embankment across it, exclusive of the high part of it before noticed, approaching the De Hart swale, is about seven feet. We cross the Bonne Idee, near the residence of Mr. Murrell, who lives on its eastern bank, on an elevated piece of land. A bridge of 100 feet span, with 20 feet abutments, will suffice to pass the water at its highest stage.

After crossing the Bonne Idee, we take advantage of a bend in that stream, lying nearly in our course, to follow its bank for two miles, which, being above the freshets, will require a bank not higher than two feet; thence we descend by a very gentle slope 1½ miles, through another piece of swamp, called the Gallion swamp, to the Gallion Bayou; and beyond it still another half mile to the end of the swamp, the edge of Prairie Mer Rouge, on the land of Captain A. A. H. Knox. The three divisions of the swamp which I have named—that is, the Mason, the Bœuf, and the Gallion swamps—have no communication with each other north of our line: this may be inferred from the fact, that the highest floods in the several divisions do not occur at the same time, or even in the same year. The streams from which they are named have, therefore, independent channels, the banks being sufficiently high to prevent the water flowing from one to the other even in floods. In fact, between Bayou Mason and the River Bœuf there is no communication; while the Bœuf, Bonne Idee, and Gallion, do not unite until they have flowed several miles towards the south. Hence the height of the freshets is not the same in these swamps. This is most perceptible in the case of the Gallion and Bœuf; the flood of the Bœuf coming from above, while that of the Gallion, being formed by the back-water of the junction, makes a difference of ten feet in the relative levels of the highest water.

From Lake Providence to the edge of Prairie Mer Rouge the line conforms generally to the course of the road usually traveled, but cuts off its bends. In a straight line the distance between these points is 36¼ miles, by the usual road, 43½, and by our line, 39¾ miles. The actual survey was carried over the ordinary road, and the place for our projected line fixed by authentic information and by reconnoissance. I derived much information from James C. Drew, Esq., and Captain Maxwell, surveyor, both of Lake Providence; from Mr. Murrell and Mr. Blackman, both of whom live in the swamp, and are highly intelligent in regard

to it; and from Captain Knox, of Prairie Mer Rouge, who has given his mind very fully to the subject.

I have also availed myself of the information of A. C. Wooldridge, Esq., engineer of the state, who had previously carried a survey over the same region. As the matter of constructing a road over this country—the dreaded Mississippi Swamp—is the only real or unusual difficulty which was anticipated on the route, I have to state that I consider these difficulties to have been much exaggerated, and that the swamp is not impracticable for the construction of a permanent work, at reasonable cost. The material is not properly that of a swamp or morass, but merely the deposit from the waters not yet high enough to escape the annual overflows. When dry, it is tenacious and firm, which character it maintains to indefinite depths.

Mr. Murrell's well, on the banks of the Bonne Idee, 27 feet deep, and lower than the bottom of the bayou, showed at the bottom gravel as large as a hickory nut, mixed with a chocolate-colored clay. In certain places in the swamp, standing water does not penetrate below a few inches. Hence an embankment of any weight may be sustained, and constructions of masonry be made permanent by a good platform foundation below. Neither is the soil of a quality to "run" in still water, though in certain cases it might be advisable to give the sides of the embankments a flatter slope than is usual.

Timber of excellent quality abounds; the "over-cup oak" is the prevailing growth of the swamp, and no timber is better for constructions of the character we are discussing.

I saw the string-pieces of a bridge over the Bonne Idee which were built of this timber. It was partly submerged in ordinary seasons, and entirely so at times of flood, the weight being sufficient to keep it from floating.

This timber was perfectly sound, although it had been lying ten years in that very trying position. The soil of much of the country is proper for bricks; hence, with durable timber, good earth for embankment, and materials for brick, we have at hand all the requisites for the road.

I conclude, therefore, that there is no objection on account of unusual difficulties of construction, excepting the interruption and injury to incomplete works from high water, which latter may be guarded against by bringing the embankments, as far as constructed, to their full heights, and when the water is about to rise, protecting the extremities by revetments of timber and plank. The embankment of a road always above water would be, for the greater part of the distance, less than ten feet in height, and never twenty feet, excepting for a few hundred feet in length at the approaches of the streams. Hence the cost will not be so formidable as has been imagined. But the great question is, if the construction of such a bank across the whole swamp will not be making a dam to hold back the freshet water, and thus bring it to a higher level, doing injury to the country above and to the work itself. It would seem that, if there were any impediment to the movement of the immense mass of water which, in seasons of flood, covers the country for many miles inland, it would cause the water to rise against and over the bank, and finally sweep it away, after having done great injury to the upper country. Of course, if openings of sufficient magnitude be not left through the embankment, such will be the effect, though less in degree than would be produced by corresponding circumstances in a mountainous region, where the floods rush in from their *sources*, or where the face of the country has a considerable slope. But there is no reason why openings of sufficient magnitude should not be made, for these, as will presently appear, need not be so considerable as would be judged without observation. The highest floods come from the water escaping over the banks of the Mississippi and lower Arkansas rivers, where they have not been sufficiently leveed, or where the levees have been broken away. This body of water spreads itself over a wide extent of flat country, and continues to deepen until the surface attains the level due to its source. At this point it stands a long time, having a scarcely perceptible current, excepting towards the streams of drainage, and in the beds of those streams. This is the universal statement of the inhabitants, and observation confirms the account. Thus we do not see in the swamp any evidence of the passage of large bodies of water with a swift current: on the contrary, every evidence is against it, amongst which I may cite the instance of the present bridge over the Bonne Idee Bayou, which being built for use in low stages, of timber very little heavier than water, kept to its

place by a few stakes, and resting partly on the bottom, is covered at seasons of floods by fifteen feet of water; and though almost ready to float, is not moved out of position.

Now, the Bonne Idee is one of the streams of the Bœuf swamp, the largest of the three divisions of the swamp of which I have spoken; and all this goes to show that the flood-water has more the character of a lake then of a running stream, and that the size of the openings for passing the water bears no relation to those which would be necessary for passing a running stream of equal width and depth. A consideration of the cause of these floods, namely, the escape of the Mississippi waters from above, and those of the lower Arkansas, will show that openings sufficient to pass these escape waters are sufficient also for draining the swamp. If there were a break through the bank of the Mississippi as wide as the whole width of that stream, and enough water poured through this opening to lower the surface of the river, with a current of five miles an hour, one foot, these openings, which together would equal the width of the river through which the water would flow, with a depth of five feet, at the rate of one mile an hour, would suffice to pass the same amount of water. But in case even of a mistake on this point, in construction, if the openings be too small, but not extravagantly so, the sole effect will be to back up the water until by this greater head it attained a greater velocity, thereby causing an additional quantity of water to pass. The difference of a foot in the level of the surface of the water above and below the bank would cause the passage of a body of water under such bridges as we propose to construct, many times greater than would be passed with the ordinary sluggish movement of the waters.

This holding back of the water would continue but for a few days before it would be brought to equilibrium, or retire to its proper channels, and leave the cultivated country above ready for the labors of the planters. It is, moreover, not necessary to proceed rashly in the construction, as it is possible to prepare the work for travel before contracting the openings to their permanent minimum. For this I would, in the beginning, construct none but the lighter embankments of earth; and as all the places of the heavier embankments are in the approaches to the openings, I would make a temporary substitute of trestles at those places, until by minute observation, precise knowledge on the proper permanent contraction could be obtained. By this means another object would be subserved, by providing a way for the transportation of the materiel for the permanent work.

In accordance with these views, I would cross every channel in the swamp, large or small, by bridges, instead of the small culverts which would be applicable in other localities; and by multiplying these until the total opening became sufficient to pass at least a foot of the surface water of the Mississippi River, I think the drainage would be entirely effected.

I have given nearly half a mile of bridging through the entire swamp, and have located it at such places as to secure a depth generally as great as ten feet, and frequently much greater, and have estimated accordingly.

The material for the banks will be dug up from the sides, and the trenches so made may be used, at discretion, to lead the waters to discharge at favorable points, or by leaving traverses to hold it in pools, and receive the sediment with a view of refilling them. I have seen this latter process applied on a small scale, but very effectually, by individuals near the mouth of the Mississippi. It has been mentioned, that at points through the swamp are spots and ridges of land elevated above the floods, from causes not always evident. The Mason hills, although generally but a few feet above the swamp, have a substratum of rock. There are many residents along the line of the road through these hills, and from some of them I learnt that in sinking their wells they had encountered a soft rock—in some instances "rotten limestone," in others, "freestone." The water of the latter is very good—that of the former slightly fœtid. The wells were from 30 to 40 feet deep.

Other elevated places through the swamp were the banks of the streams, which, according to the universal rule in this country, are higher than the country back of them.

This is as true in regard to the Mississippi as to the smallest bayous; the slope of the country from the bank of the Mississippi within the levee, to the bank of the Washita, a distance of 53 miles in a straight line, being 20 feet; and the highest

water of the Mississippi 28 7-10 feet higher than that of the Washita. We availed ourselves of this law to obtain high ground for our line wherever the streams ran in the proper direction. More space has been given to the discussion of this part of the route than will be to any equal extent of the remainder, for the reason that little knowledge and much misapprehension exists on the subject of the practicability of ways through the "Mississippi swamp," and because the observations made have general application to other parts of the swamp than that over which the line was carried, and probably to the whole region subject to overflow formed by deposit from the Mississippi River.

On leaving the swamp, our line passed near the residence of Captain Knox, over Prairie Mer Rouge, and in a distance of four miles came to an abrupt rise from the plane called the Red Hill, which is the border of a range of hills stated to begin at Pine Bluff, on the Arkansas River, and, running southerly, to cross the Bayou Bartholomew about 12 miles above Prairie Mer Rouge; whence, continuing to the south, they cross our line and diminish in height, until they are lost in a table which reaches the Washita, near the plantation of Senator Downs. We passed through the town of Bastrop, which is built on these hills, and found its elevation to be sixty feet above the prairie, and about one hundred feet above the water of the Bartholomew.

Two miles beyond Bastrop we strike that bayou at Point Pleasant, sixty feet lower than Bastrop, but still above high water; we then followed the general course of the bayou on good ground all the way to the Washita, crossing Bayou Saira and Bayou Bœuf, which now discharge their waters into the Washita, but which, in high stages, reverse the direction of their flow and assist in carrying it off. These will require bridges. By following the bayou, we are carried three miles to the south, out of our way, to Collier's Point, the place selected for crossing the Washita; but we avoid by this two crossings, with draw bridges, of the Bartholomew, in case we continue to Collier's; or one if we consent to cross the Washita at the village above Collier's, which is an inferior place, and involving heavier expenditure. The line from Knox's just described, and which was traced on the ground, is not the one proposed for construction. The bends of the Bartholomew are too abrupt, and the Bastrop hills would require deep excavation. I would, therefore, starting from Knox's, leave Bastrop about two miles on the right, or north, and run through the foot of the hills, where they have inferior elevation; thence to the southernmost point of the bend of the Bartholomew, on the plantation of Senator Downs, when we fall into the line as traced on the ground. From this southern point we turn northerly three miles, until we arrive on the bank of the Washita, opposite to Collier's Point, which, as before stated, is the place selected for crossing. This projected line is on lower ground than that actually traced, being sixty feet lower opposite Bastrop than the ground occupied by that village: this is judged of by the depth of Beauchamp's well, at his brick-yard; but the greater directness, easier grades, and lighter excavation through the hills, serve to sanction the selection of the route.

The material composing the Bastrop Hills is sand and clay; the water stratum, 30 feet in depth, is a fine white sand. The clay is good for brick-making, and many are made in the vicinity. Where we strike the Washita, we are on a table above the highest rise of the river, with a fine bluff (Collier's Point) still higher than the table, on the opposite side, and no bottom land whatever.

The river, at the highest water-line, is 600 feet across, and at the low water-line, 310 feet. The bed is composed of sand and coarse gravel, from the eastern shore to the middle, beyond which is a rock-reef, extending diagonally down stream to the western shore. At this river, at this point, the Mississippi alluvion ends, and the hilly country, frequently with rock in the hills, begins, and continues to the Red River. The Washita River rises in extreme floods 41 feet above the low water mark, and has, when low, a depth of from 9½ to 11½ feet in the channel at Collier's Point. The bridge to span it should be 600 feet long, piers sixty feet high; and as the river is navigated, the bridge should be provided with a draw. Beyond the Washita we are on the ridge between that stream and the Loutre, a tributary entering about six miles below our crossing. We turn northwesterly, and continue on or near the crest of the ridge some seven miles, when it becomes necessary to decide whether to cross the Loutre, and get on the ridge between it and the D'Arbonne, and then turn northerly, or

to keep on the ridge northerly to the head-waters of the Loutre, near El Dorado, in Arkansas, and then turn to the west on the old trail of the Quapaw Indians. The country beyond the Loutre was more populous; the roads in better order; supplies more easily obtained, and information more reliable and abundant.

It was decided to cross the Loutre, which we did at Brown's Ferry. The country between the Washita and this point is rolling, but favorable for construction. There is rock in the hills, which became visible at Dr. Collier's spring, near the Washita, but not elsewhere. The soil is good for bricks, and many are made near our line. The Loutre will be crossed by a bridge of 150 feet span and 25 feet high, which is sufficient to pass the highest water. The western shore of the river is low, however, for a distance of three-fourths of a mile, and is much like the Mississippi Swamp: it will require a bank from ten to eighteen feet high to bring the road above high water. The line is continued eastward to the D'Arbonne side of the ridge, towards Farmersville, the county-seat of Union Parish, which place we leave one mile and a half to the left by the actual line, and three and a half by the projected line, and continuing on the D'Arbonne side of the ridge, pass near a place called Spearsville, six miles beyond which we cross the state line into Arkansas, 42¼ miles from the Washita; and thence continue twenty miles further, in a general northwest course, to Darden's, on the road from El Dorado to Springhill, and near the dividing ridge between the Smacovert and D'Arbonne before described. If, instead of crossing the Loutre, we had continued up the ridge between that stream and the Washita to El Dorado, and thence turned westward, the two lines would have joined at Darden's, the distance being about the same.

We found the country, after crossing the Loutre, very hilly, with abundance of rock, until after passing Farmersville. Beyond Farmersville it has still a very irregular surface, and we lose sight of the rock until we approach Spearsville. Near the Arkansas line there is much sand, the roads in some places being deep with it. It is not, however, difficult to accommodate a good line to the country with reasonable curvature and grades of fifty feet to the mile.

From Darden's we continue westward, on the ridge before mentioned, (said to be the Quapaw trail,) to Col. Bucknor's, at Beechland Post-Office. Here another choice of routes presents itself, and we may incline northerly towards Springhill, lying ten miles east of Fulton, and, crossing the Bois d'Arc, Bodcom, and Dorcheat rivers, near their sources, reach Fulton by that route in a distance of 58 miles, or we may continue westward on the same ridge ten miles further; and thence, inclining to the south, pass into the valley of the Dorcheat, and following down the slope of one of its branches, called Big Creek, cross the Dorcheat just below the junction, 26½ miles from Beechland; thence, following up the opposite slope of the Dorcheat, and the ridge between it and the Bodcom, descend obliquely the Bodcom slope, and cross that stream three miles south of Louisville, the county-seat of Lafayette county; thence, following up the slope of its valley and that of the Little Bodcom, its tributary, to the source of the latter, pass into the valley of the Bois d'Arc, and, crossing that stream, reach the table bordering the Red River, on which we keep to its edge back of Fulton; then, descending, reach the Red River at Fulton, with a distance from the Dorcheat crossing of 40¾ miles, and from Beechland of 67 miles, or nine miles further than by the other route. The line, however, was run over the latter route, as it enabled us to examine the ground with reference to a nearer terminus on the Red River than Fulton. The country, from Darden's towards Fulton, on the ridge between the D'Arbonne and Smacovert, is high and undulating, but presenting no obstacle to cheap and safe construction. To pass into the valley of the Dorcheat, we have to surmount a summit requiring 20 feet cutting, from which there is nothing unusual to the place of crossing. This will require a bridge of 100 feet span, with abutments 25 feet high, and beyond it a bank a mile and a half long, and about nine feet high. From this we attain the ridge between Dorcheat and Bodcom by easy slopes, and, while on the ridge, have a level plain; thence, descending to the Bodcom, along the slope, we find sinuosities requiring curvatures. The soil between the two streams is sand, clay and gravel, easily excavated, but no rock. I saw gravel here in which the pebbles were as large as eggs; and many of the streams ran over fine white sand. The Bodcom must be crossed by a bridge of 100 feet span, with abutments 35 feet high, and there will

be about a mile of bottom land requiring embankment. Beyond this, along the slope of the Bodcom valley, and that of its tributary, the Little Bodcom, and through the dividing ridge into the valley of the Bois d'Arc, 17 miles, the gravel is quite irregular, and large quantities of rock appear in the hills—the first met since entering the state.

We cross the Bois d'Arc by a 100-feet bridge and 30-feet abutments, with a mile of embankment on its eastern side. Beyond the Bois d'Arc we rise at once to the table-land of the Red River, on which nothing but a low embankment will be required.

From this table, within half a mile of Fulton, we descend on the slope, obliquely, with a 50-feet grade, to the level land lying just above high water, and on which the town of Fulton is built. On this we may find ample depot accommodations. To cross the Red River would require a bridge 800 feet long, with a draw, with piers 35 feet high, and placed on piled and platform foundations.

From the crossing of the Dorcheat we might have reached the Red River at a point nearer by 20 miles than Fulton, although nearly as far west as that place. For this we would have continued nearly due west from the Dorcheat, crossing the Bodcom at a lower point of its course than the present, and passing below the mouth of the Bois d'Arc, to Conway, 30 miles south of Fulton in a straight line, and 60 by the course of the Red River. As this route runs directly across the ridges, it is probable that it would cost more per mile to contract than by our present line; still, as it is but half as long, there will be a material saving of first cost, with the advantage of a diminution of no less than 20 miles in the whole length of the road.

As a line of levels was carried from the Mississippi to the Red River at Fulton, it may be well to give the relative heights of those streams, as well as the Washita—not that it is of consequence as regards the location of a road, but as it may be of some general interest.

From the Mississippi, at Lake Providence, a straight line to our crossing-place over the Washita is 53 miles in length; but inclines a little down stream, or to the south, viz: 6½ miles. The highest water of the Mississippi is 3 7-10 feet higher than the highest ground of the village of Lake Providence, immediately within the levee. This latter may be called the natural bank of the Mississippi River; for one-fourth of a mile back of this it is five feet lower, and the swamp begins. The east bank of the Washita is 20 feet lower than this, and the highest water of the Washita five feet lower still, or 28 7-10 feet lower than the highest water of the Mississippi at Lake Providence. The lowest water of the Mississippi could not be ascertained with precision; but that which we found by inquiry to be the lowest, was 7-10ths of a foot higher than that of the *high* water of the Washita, or 41 7-10ths feet higher than the low water of the Washita.

The low-water mark of the Washita at Collier's Point is 190 feet lower than the low-water mark of the Red River at Fulton. The distance from one place to the other, in a direct line, is 117 miles; but, measured on the map from Fulton down the Red River to the mouth of Black River, (a prolongation of the Washita,) is 431 miles; and from the mouth of Black River, up the Washita to Collier's Point, 187 miles. Now, if the declivity of the Red River and Washita be the same, this will indicate a fall in both these streams of 9½ inches per mile. There is, however, reason to believe that the declivity of the Washita is much less than this; for the current is quite sluggish, and freshets do not swell the river at a rate of more than a foot a day. It is, moreover, asserted that, in 1844, the rise in the Mississippi produced slack water in the Washita at Collier's Point. This would indicate a very gentle declivity; and Dr. Collier considers that the declivity is not greater than 45 feet between Collier's Point and the debouche of the Washita into the Red River—a distance by the river of 187 miles.

If we assume the declivity at 2½ inches to the mile, it will give 39 feet fall, and a declivity to the Red River of 6 38-100 inches to the mile.

It was stated that the high water of the Mississippi at Lake Providence was determined to be 28 7-10 feet above the high water of the Washita at Collier's Point. From Lake Providence, down the Mississippi to the mouth of Red River, is 240 miles; and from Collier's Point, down the Washita to the same point, is 209 miles. The Mississippi is said to have a declivity of two inches per mile; but in freshets it must be more—say 2¼. This would give the descent of

the surface of the river, from Lake Providence to the Red River, 50 feet. At this period, in 1844, it is said there was slack water at Collier's Point. If by the term "slack water," as popularly used, is meant a gentle current, it would be such as would be due to a fall in the Washita of 50—28 7-10=21 3-10 feet, or 255 6-10 inches, in a distance of 209 miles, or 1 22-100 inch to the mile. Taking, then, the declivity of the Washita to be 1 22-100 inch per mile, we find the declivity of the Red River to be 5 82-100 inches per mile. The minimum limit of the declivity of the Red River is 5 29-100 inches per mile, and this is obtained by assuming a level for the bed of the Washita. As I mentioned before, these speculations have no bearing on our work, but may subserve other important interests.

Having now given the topography of the country through which the line passes, with incidental remarks bearing on the construction, but little more will be necessary.

The rock which we saw was universally a sandy, ferruginous material, or a conglomerate, united by a ferruginous paste. It is fit for small constructions, and for backing. I have seen it applied for foundations, and for chimneys; and, in these cases, it had come from the quarry in good shape and size, and bore the weather well. The absence of heavy frost is, of course, a favorable circumstance. The character of the soil for excavation, judged not only by surface indications and the escarpment of streams, but also by wells, shows that it is mostly of easy excavation, and none beyond the medium. It is generally of sand or clay. The sides of the wells are in most cases left without curbing, and stand well. They are from twenty to forty feet deep, and the water stratum generally sand. In the vicinity of the line, for nearly its whole extent, soil may be found proper for bricks, as well as fuel for burning them; and this material may be used extensively. Lime is made some twenty miles north of Fulton, and is furnished at that place at twenty-five cents per bushel. Rosendale cement is now brought to Fulton, and sold there at $3 per barrel. If large quantities were required, it could be imported for less, or the cement obtained from a nearer place, viz.: Louisville, Ky., where it is made of excellent quality. Timber abounds, (the whole line having been run through forest,) of all varieties, suitable for use on public works. I have seen oaks, in their several varieties, *i. e.* white, black, red, post, pin, chinquopin, water, burr, and over-cup; yellow and pitch pine, red cedar, (in the Red River bottom,) yellow and honey locust, beech, (east of the Dorcheat,) cypress, black mulberry, black walnut, white and black ash, sycamore, hickory, pecan, chinquopin, sweet and black gum, elm and sassafras—the last proving very large. The Bois d'Arc, also, is a hard, yellow wood, useful for wedges, keys, handles, &c. There is no chestnut, the chinquopin, (a smaller variety,) being the substitute; nor is there white pine, hemlock, spruce, or larch. Through the woods, pine and oak, in their several varieties, are the most common.

The streams to be crossed, other than those specified, are such as not to require large works to pass the water. I have estimated for about forty arch culverts, of various spans, from six to twenty feet; and these, with the bridges through the swamp, not before mentioned, sixteen in number, with abutments from ten to eighteen feet high, constitute all the large constructions in masonry; the rest are in the form of box culverts or brick barrels. The system which throws the location on the ridges, causes the streams to be crossed near their sources, and saves the necessity for heavy constructions in masonry. Good foundations, too, for masonry, may be had by the use of platforms, to distribute the weight, and, in some few instances, by the use of piles. The supply of fuel for engines is nearly exhaustless; but for water, there will be many instances where pumping must be resorted to, as in those cases no springs or streams, with sufficient head, can be found. This is, of course, the case wherever the line lies on the crests of the ridges. It is not easy, at all times, to bring to the work those supplies and materials for construction not produced in the vicinity; but at certain seasons, when the waters are up, no point of the line is very distant from some place which may be reached by water. By taking good advantage of this circumstance, and by completing such portions of the road in the beginning as will facilitate transportation to other portions, the supplies may be tolerably well regulated. I annex the results of a detailed estimate for a rail-road, with a single track, and the necessary turn-outs. It is given in divisions, which are made at the points where we would diverge from the present line, to traverse other routes which have been indicated in this report.

DETAILED ESTIMATE.

Length of division.	Names of points of division.		Quantity in yards, and cost for excavating rock and earth, including hauling and incidental expenses.		Quantity in yards, and cost of masonry, including excavation and preparation of foundations.		Length and cost of superstructure of bridges.		Length and cost of superstructure of track, including turnouts.		Cost of depots and water stations.	Total cost for each division of grading, masonry and bridging.	Total cost for each division of superstructure of track and depots.	Cost per mile of grading, masonry, and bridging.	Cost per mile of track and depot.	Total cost per mile, exclusive of engineering, equipment, and contingencies.	Total cost of construction.
Miles.			Yards.	Dollars.	Yds.	Dolls.	Feet.	Dolls.	Miles.	Dollars.							
40.7	From Fulton to Dorcheat	Earth,	762,800	149,420.	6,792.	60,467.	220.	6,100.	42.73	$341,840.	$19,943.	$215,987.	$361,783.	$5,307.	$8,889.	$14,196.	$577,770
		Rock,	35,000														
26.3	From Dorcheat to Beechland	Earth,	712,000	106,800.	5,638.	33,287.	150.	3,250.	27.62	220,893.	12,634.	143,337.	233,517.	5,450.	8,879.	14,329.	376,854
5.8	From Beechland to Darden's	Earth,	168,268	25,240.	935.	6,235.	.....	.....	6.09	48,720.	2,784.	31,475.	51,504.	5,427.	8,880.	14,307.	82,979
62.5	From Darden's to Washita	Earth,	1,712,238	311,836.	10,698.	77,317	150.	4,500.	65.62	524,960.	30,000.	393,653.	554,960.	6,362.	8,879.	15,241.	948,613
		Rock,	55,000														
59.4	From Washita to Lake Providence	Earth,	2,344,890	351,734.	22,149.	168,702.	2,950.	58,000.	62.37	498,960.	31,849.	578,436.	530,809.	9,738.	8,936.	18,658.	1,109,245
194.7	From Fulton to Lake Providence	Earth,	5,700,196	945,030.	46,212.	346,008.	3,407.	71,850.	.....	1,635,373.	$97,200.	$1,362,888.	$1,732,573.	$7,000.	$8,898.	$15,898.	$3,095,461
		Rock,	90,000														

SUMMARY.

Total cost of construction	$3,095,461
Engineering and contingencies	200,000
Equipment, locomotives, cars, &c.	270,000
Whole cost, with equipment	3,565,461

Equal to $18,313 per mile.

From this estimate, it appears that a rail-road for a single track, with iron 60 pounds to the yard, and otherwise well constructed, will cost about three and a half millions, or less than twenty thousand dollars per mile; which, compared with similar works in other parts of the country, is a moderate cost. In case it be deemed best to strike the Red River below Fulton, at Conway, we leave the present line at the Dorcheat, and instead of turning northerly, as at present, continue the general west course, by which we will be brought to the Red River at Conway, in a distance of 20½ miles, in place of 40 7-10 miles, as by the precedent line. We thus save 19 2-10 miles of distance, and $272,563 of cost in construction, (equipment, engineering, &c., remaining the same,) provided the cost per mile be the same as on the other line. But as the projected route to Conway will have to cross the ridges, it is possible it may cost more per mile; and for this allowing $50,000, leaves the total saving $223,000; giving the cost of the whole road $3,342,000, and its length 175½ miles. In case we diverge at Beechland to take the route to Fulton by the way of Springhill, we reach Fulton in a distance from Beechland of 58 miles, instead of 67, as by the route surveyed; thus saving nine miles in distance, $128,000 in cost—giving the cost of the whole road $1,437,000, and its length 185½ miles.

In case, after crossing the Washita, we do not cross the Loutre, but keep between it and the Washita, turning the heads of the Loutre near El Dorado, and falling into the present line at Darden's, ten miles from El Dorado, the distance will be about the same; and the cost and repairs of a bridge and heavy embankments over the Loutre and its bottom lands saved. This will not be less than $30,000 in first cost. It is probable, moreover, that the ten miles between El Dorado and Darden's has more favorable ground than any continuous te miles on the present route. Hence I judge the route by El Dorado to b preferable.

Just east of the Washita, in case we wish to avoid the bend to the southward which the Bartholomew makes before entering the Washita, and run more directly to Washita City, from a point in the present line south of Bastrop, we will have to cross the Bartholomew once with a draw-bridge, and the Washita at a place inferior to the present—Collier's Point. The line will, besides, on lower ground require heavier embankment. But we will save the two bridges over the Saira and Bœuf bayous, and also three miles of distance. The cost of the two routes will be nearly the same; and the question of a draw-bridge over the Bartholomew on the one hand, and three additional miles of distance on the other, must influence the choice.

The above communicates all the information I have gathered in relation to a rail-road between Lake Providence and the Red River, near Fulton, constructed in the best and most permanent manner usual in the United States. Modifications may be made to lessen the cost, and in some cases temporary constructions may be adopted. Thus, through the swamps it would be expedient to build the abutments and piers of all the bridges of timber, and make the approaches to the bridges over the low grounds of trestles. By this, two points will be gained: the exact necessary amount of water-way may be ascertained by observation, and a road provided by which to transport material for the permanent construction.

A piled or trestled road across the swamp, of the necessary height, and properly braced, would not cost less than an embanked road, and would not have the quality of permanency belonging to the latter.

A *common road*, from Lake Providence to the Washita, to be kept above water at all times, would be located near the line traced. The earth-work would cost $400,000; timbers, piers, and trestles for the bridges, $5,000; and their superstructure, $13,000; total, $418,000. But if built so as to be serviceable eight months in the year, and then given up to the overflow, it might be built for $100,000. But no road built of merely the earth of the swamp, could be kept of a good surface without protection. Plank is by all means the best covering for the locality; and to convert either of the above into a plank-road would require, from Lake Providence to the Washita, $60,000 in addition. Beyond the Washita, which would be crossed by a ferry, the line traced by our survey indicates very well the proper route for a common road: and on this line a road embanked sufficiently for drainage, with good side ditches, culverts, and bridges, may be built

for $1,000 per mile, or $140,000 to Fulton. This, however, does not contemplate any other surface to the road than the contiguous soil. If covered with plank the cost would be double, or $280,000. A good common road above freshets may, then, be built from Lake Providence to Fulton, for $558,000, or a plank, road, for $758,000. Considered merely as a local work, without reference to the extension towards the Pacific, a plank-road from the Mississippi to the Washita, and a common road thence to the Red River at Conway, would be such as would best subserve the interests of the community. This would cost $593,000.

All of which is respectfully submitted, by

W. H. SIDELL,
Civil Engineer in charge, and United States Agent.
J. J. ABERT, *Chief of Topographical Bureau.*

SOUTH-WESTERN RAIL-ROAD PROSPECTS, ETC.

This is a period in the history of the world in which *advancement* is emphatically the order of the day: kingdoms and empires that have been slumbering for ages are now awaking to the importance of intercommunication upon the well-being of man, and are exerting their gigantic energies to open great highways of commerce throughout the world.

The arts and sciences are advancing with a rapidity never before known; while new discoveries and inventions give facility and impetus to the onward march of our race to the ultimatum of human destiny.

The spirit of improvement has seized upon the masses of the people; and its wide-spread influence is seen and felt in its meliorating effects upon their physical, intellectual, and moral condition.

Where this spirit has prevailed, it has overcome prejudice; aroused indolence to energy; supineness to effort; given new impulses to trade, and multiplied the sources of wealth and happiness to the laboring classes.

Cheap and rapid communication between the interior and our seaboard towns is a subject of the most vital importance to our prosperity and well-being.

Men of eminent ability, whose genius is guided in its researches by the light of revelation, as well as of reason, have taken up this subject with an earnestness which its importance invites, and presented the result of their observations to the public, which has been reflected upon the dark portions of the world, until its reciprocal blessings are felt by all.

Of all the means of artificial inland intercommunication, rail-roads afford the most desirable facilities, which modern developments, in their adaptation for transportation and travel, have so far engrafted upon the business of the country, as to render them absolutely necessary to our prosperity.

The assembling of this Convention may well be considered as the most important epoch in the history of Louisiana, and the South-western states generally; and it is proper that we avail ourselves of the present aroused sentiment of the people, to establish and permanently engraft upon this portion of the country and its administration, such a system of internal improvement as shall be best calculated, in its progress and final completion, to connect and bring to one common conveying point, the products of this portion of our country.

The city of New-Orleans may justly be considered the great emporium of the South; the commercial centre and heart of this portion of our confederacy; from whence, if she is true to herself, must radiate an influence that, whilst it will bring to her increased wealth, cannot fail to send abroad, even to the shores of the Pacific, an influence which will cross that ocean, and bring back rich returns from the eastern dominions of Asia. It must be apparent to every reflecting mind, that unless we enter at once upon an extended system of rail-road enterprise, commensurate with our wants and necessities, as compared with other parts of the country, we shall not only remain stationary, but actually retrograde. If these things are not apparent to every intelligent mind, reason would fail to make it plainer.

Louisiana, Mississippi, Arkansas, and Texas, should lose no time in providing, by legislation, for the early commencement and rapid prosecution of such work, within their respective borders, upon such an agreed scale as shall serve as connecting avenues of transportation and travel, thereby creating a system of inter-

communication, as may best develop the great resources of the country, and arouse to action the now dormant energies of the people.

In the outset of these recommendations, it may be well to briefly state, that there is an increasing necessity for having all connecting roads constructed of the same gauge, which the South-western states should not for a moment lose sight of. The "*wide gauge*," as it is called, should be adopted at once, and the iron rails placed six feet apart—a subject which should engage the early attention of the respective legislatures of those states, that it may be provided for by law. In this mode, the cars, locomotive engines, turn-plates, and machinery, would have a uniformity that would ensure a facile adaptation, and change from one road to another. Two of the longest and most important roads in the world use the "*wide gauge*," the Erie, and the Russian road between St. Petersburg and Moscow.

Every one looks with certainty to the early construction of the projected rail-road from New-Orleans to Jackson, Mississippi; thence running west to intersect the two great trunk lines between Memphis and Charleston, and Mobile and Chicago, the former now urging to completion, and the latter in rapid progress of construction. Yet there is one suggestion in regard to the New-Orleans and Jackson road, which I may be pardoned for making at this time, in order that the company having it in charge may, at the inception of the work, make adequate provision for doing the business that will certainly press upon it with greater force than the most sanguine will at this time anticipate. Such has been the experience upon the great Erie Rail-road, that even thus early, (not yet six months in operation,) the directory are casting about to make provision for another track. Let the road-bed be constructed for a double track, that as soon as the rails are placed upon one, the other may also be in a state of preparation for the rails, no practical mind will doubt that the transportation and travel upon this line will justify it, else New-Orleans must perish in her efforts to advance, by the acquisition of renewed commerce, traffic and travel from that portion of the country drained by the tributaries of the Upper Mississippi. In that mode, the company will not only be amply prepared to accommodate all the business that may concentrate there, but to invite it from other numerous competing avenues. The time has come when timid, or doubtful half-way facilities for trade and travel, will neither promote nor satisfy the enterprising march of all the commercial and industrial pursuits of this advancing age.

There is no time to be lost: let the capital and energies of the people, both in Mississippi and Louisiana, sufficient to build this road, be combined and concentrated, and the work pushed forward with vigor to an early completion. Permit me to tell you, Louisianians, that one fatal step now will forever blight the realization of your anticipations of making New-Orleans the queen city of the South.

It has now become a settled question, that the rich commerce of the West, drawn off to the Atlantic seaboard by the numerous artificial lines of canals and rail-roads, already in operation, and in process of completion, can never be regained and brought back to find a market through former channels; hence the greater the necessity for the South to enter at once into the field of operation, for an organized system of internal improvement, best calculated to create and bring into activity and usefulness the combined means and energies of the people of every county, city, town, and village, in each of these states. Let the leading men, at all their primary assemblies, embrace such occasions to address the people orally upon these subjects, until every man shall become imbued with a just sense of the wants and necessities of that part of the country in which he lives—pushing forward from rill to river, until it shall swell into one mighty flood, gaining strength, like an avalanche, until it shall uproot that lethargy of sentiment which holds in check the enterprising mind.

There is no feature in modern progress for obtaining means, in addition to voluntary subscriptions, for the construction of rail-roads, in the new and less populous portions of the United States, half so safe and effective in every sense, as subscriptions of stock by the regular constituted municipal authorities of cities, towns, and villages, and by the respective county courts; thus constituting the people at once stockholders, thereby identifying them directly with its prosperity, developing at one and the same time the energies of the whole country, a striking

evidence in favor of the security of the road, and the ability of every section of our country to build roads without resorting to borrowed capital, even to make the road-bed, so fatal to many of the most important enterprises in this country.

When the people properly understand its effects upon themselves and the country, they will come out in a mass in favor of the measure, and one sentiment will pervade the minds of all, creating a spirit of commendable rivalry in all industrial pursuits, which must in time revolutionize in sentiment the whole South-western states, build up manufactories, and advance us in all our agricultural and commercial relations, (and engraft upon our people an awakened system of home industry and self-reliance, making us more respected both at home and abroad, and no longer tributary to the other states, and the rebuking influences of their citizens,) producing within our own borders all the necessaries and comforts of life, as good and cheaply as they can be procured abroad, truths that must press themselves upon every patriotic mind.

The Gulf of Mexico may justly be considered the heart of the ocean, through which must pass the commerce, travel, and mail facilities of Europe and the Eastern states, onward over the Isthmus routes to the Pacific shores, until the completion of our proposed system of rail-roads from New-Orleans, over the fertile prairies of Opelousas, on to Texas and to the Pacific by the El Paso and Gila route, and from the Mississippi River, opposite Memphis, to Little Rock, and Fulton, on Red River; thence to a converging point to intersect the New-Orleans road in Texas, now deemed the most feasible and advantageous routes for a great national highway, to connect and bind together the two great oceans of the world. From the great length of these roads, as also from the conformation of the country through which they will pass, other rail-roads will spring up, which will be tributary to, and not rival, having the advantage of connecting a whole system of railways between these great oceans with the commercial metropolises of the valley of the Mississippi—New-Orleans on the one hand, and Memphis on the other, by which the trade and travel of whole states beyond will find a channel to these great centres of business.

Louisiana cannot hesitate as to what she ought to do, now that Tennessee has come out so nobly in support of that great internal improvement cause, which even in its infancy, in connection with the ocean steamers, guarantees to the American people the commerce of the seas and the supremacy of the world.

Premising that long before the meridian sun of this generation shall shine upon us, over the fertile plains of Louisiana, Arkansas, Texas, and California, a great highway will spring into life, for the thronging emigrants of both worlds,—and for the abounding products of its soil a capacious outlet,—returning the tribute of a rich commerce to these states from which they had sprung, its magnitude in the fulness of its growth, beyond human conception, passing through a mild, salubrious latitude, which can never be obstructed by snows or ice, and other impediments incident to higher latitudes.

Arkansas looks with confidence to this Convention to devise ways and means to bring to the early consideration of Congress a proper application, emanating from, and concentrating the power and influence of the South-western states, and of all the other states of this Union, that can be enlisted in the cause, for a grant of the "*right of way*" throughout the whole extent of these projected roads, and suitable grants of land in aid of their construction, on a scale commensurate with the magnitude of the proposed work, from one extremity to the other. In view of these liberal grants of lands to be set apart mainly as a sort of sinking fund for the purchase of the iron rails and the equipment of these roads, it is deemed feasible to construct the whole work by individual enterprise, through the fostering aid of the respective states under different corporations, a system of improvement far more preferable and effective in new countries than could be obtained by the direct aid and influence of the Federal government, which too often, if not always, gives to public works a political aspect, if not in the end fatal to the enterprise itself; producing wrangling and contention irreconcilable, and otherwise by executive patronage exciting the just fears of every patriot.

I beg the indulgence of the Convention to be specially heard, for a moment, in this place, on behalf of the state of Arkansas and her people, for and in whose name I have the honor to address you; and to state, in this connection, an important matter, that I hope will not escape the particular attention of every one

present, placing as it does the projected road from Memphis through Arkansas, to unite with the Texas and Louisiana roads, in a very important and truly commendable position in reference to its connections with neighboring states. Upon a careful examination of a map of the country, it will be found to be one of the main connecting links of that great system of "*main trunk lines*" of rail-road now traversing the United States. Crossing the Mississippi River at a point where it will connect with those immense thoroughfares which lead to all the important commercial centres of the West, and to the great marts of the East, on the Atlantic seaboard—finding at Portland, Maine, a connection with the extension of the projected Halifax and Quebec lines of railway, now under process of survey by the "*European and North American Rail-Road Company;*" traversing the provinces of New-Brunswick, Nova Scotia, and the Canadas, via Quebec, Montreal, to the Falls of Niagara, up along the northern shores of Lake Erie, to where it intersects the "*Great Western Railway of Canada,*" that brings you to Detroit, the completion of which is now deemed certain, under the guarantee of the British government and these North American provinces. Another striking feature in the Arkansas road, which must be kept in view, is, that it will, by its connection with the Memphis and Charleston road, intersect the New-Orleans and Jackson Rail-road, in its onward course through the state of Tennessee—spanning at one bound the North American states and the British provinces, connecting the two oceans, and the great northern inland seas; binding in "*bands of iron*" and locomotive attraction, all that new world of commerce, trade, and travel; concentrating and diffusing, with lightning speed, that vast and swelling stream of intelligence, and march of the human mind, now the wonder and admiration of the age.

I trust it will not be considered extravagant for me to say, before this body of patriots, congregated here on an occasion that will be chronicled in history, what is admitted on all sides, though not adhered to for any effective purpose, that as the laws of trade are inviolable, the country which, like the Mississippi valley, is possessed of the greatest number of materials necessary for manufactures, will be the ULTIMATE manufacturers; and the time is close at hand, when the world will scarcely believe that such a state of things could by any possibility have existed, as to have permitted raw materials to go to England from one continent, and food from another, for the production of goods to sell in a third. By this we arrive at a point which may well be considered as a main element in this view of the resources of that vast region of country west of the Mississippi, whence the growing manufactures of that valley must draw a majority of their supplies, and in which it must find an expansive market for their fabrics depending upon that great rail-road system, to extend from the Mississippi to the Pacific Ocean.

The American mind, fresh from the completion of canals and rail-roads, of gigantic proportions, in the older states. and from the acquisition of California, with her rich resources—what is there in this Pacific road that should make us pause, although we admit the enterprise to be a colossal one; and yet who will have the assurance to say that we have not the means and energy proportioned to this and the other great works, laid out for the American race upon this continent. How can we accomplish it? I answer, by bringing into active life the labor and the now dormant energies of our people; to grade the roads and make the superstructure; and by securing a just proportion of the public domain, to purchase the iron rails, and for the equipments of the road.

It is obviously true, that the immense amount of the public lands will, if not in a mass, be appropriated by piece-meal, to satisfy the numerous demands made upon the federal government, by different states, for various objects, until they are all gone; now amply sufficient, if promptly and judiciously made available, to construct and equip all the rail-roads that may be required in the Western and South-western States during the present century. In fact, such an application of them is the best, if not the only mode, of making them available to the people; and such a disposition of them would meet with favor from every quarter, and should engage the early attention of Congress.

The immense migration to, and rapid settlement of, our Pacific possessions, have hastened events, and brought them to a point where it becomes necessary to

decide immediately on the adoption of some plan, for the construction of a more direct and rapid connection, than any now existing.

Again: of the progress and position of the Pacific States, the world, and its history, does not afford a parallel. The discovery of the rich mines has enticed and congregated there thousands of people, of all nations, kindred and tongues, reared and educated under various forms of government, many with unbridled passions, unaccustomed to our institutions and laws, hard to govern in their present position, which gives them the command of the commerce of the Pacific, with China, and with all Asia. Hence the more immediate the necessity of opening a great highway, facilitating trade, the interchange of commodities between the two oceans, and an immense population of consumers in the intermediate valley. This is not a new subject; it has been for a long time before the public, discussed and commented upon in every quarter; but the position at present assumed is different. We ask for these grants to be made directly to corporations, created and controlled within their proper sphere by state authority, involving no constitutional difficulties.

To illustrate: an eminent writer upon the subject of private corporations, remarks,—only a few years since "Professor Morse deemed the construction of an extensive electric telegraph impracticable, except by the general government, who repelled him, as it had repelled De Witt Clinton, when he supposed the Erie Canal could not be built without aid from the national treasury; and to these refusals we owe the numerous telegraphs which are pervading our country, and the numerous canals and rail-roads with which the states have enriched their respective sovereignties; improvements greatly more extensive than the general government could have accomplished, had it been ever so willing. The United States in their agencies seem naturally obdurate. In a degree proportioned to their unfitness, men in their aspirations naturally call upon some *Hercules*, instead of eliciting an energetic exercise of their own powers. But we evolve principles practically, long before we see them speculatively, or we should not persevere, as we do, in a reliance on the general government for what we term internal improvements; and which, except for such reliance, would readily be accomplished to every profitable extent, by our states individually, or their people: a sufficient reason why our states increased so rapidly in power, after their separation from Great Britain.

Pennsylvania and Michigan, which relied on state agency for the construction of rail-roads, became insolvent and unable to complete their undertakings; while the states of New-York and Massachusetts, who constructed theirs by private corporations, completed more rail-roads than the former states ever contemplated. Wise, therefore, is the policy which, by means of private incorporations, enables individuals to combine their resources, and thus to extend the sphere of personal efficiency, the great reservoir of all efficiency.

It is neither my province nor my pleasure to depreciate the claims of rival routes, for a road through Arkansas, that may be, in the estimation of others, entitled to a priority of consideration by this Convention. Yet, I trust to be excused for asserting, in terms not to be misunderstood, that I shall here conscientiously discharge what I conceive to be my duty to those I represent, to you, and to our common country, by again reiterating, and pressing it upon the deliberate judgment of the whole Convention, the pre-eminent claims which the route it is my pride and pleasure to advocate (but only in general terms) possesses, for the easy and cheap construction of a *main trunk road through the state*, over all other competing routes that may be advocated. I state this, from some personal knowledge of the country over which that road would pass, as well as from an investigation of the most material objections that have been heretofore raised against its real merits, as compared with other routes spoken of. It has the advantage of being central; and will be of far more general benefit to the present and future population of Arkansas, and to the country generally, than any other route indicated. Should it be thus appreciated by this enlightened body, and receive their recommendation, as one of the links to connect the road terminating at Memphis with the Louisiana road in Texas, in its projected course to the Pacific, it could not fail to meet the approbation of a very large majority of the people of this state.

I believe I hazard nothing in asserting, that in no other way can the South-

western States succeed so effectually in laying a sure foundation for the construction of a judicious system of rail-roads, or that will have such beneficial effect upon the whole country, as by uniting all the means and ability of the respective states through which these roads may pass, upon the construction of the lines here indicated, until they are fully completed, and equipped for business, an undertaking fully equal to the ability of these states, estimating a large proportion of the "*road-bed*" to be made by the surplus labor in the country. A diversion from this recommendation might greatly retard, if not blight, for years, our prosperity; and I crave indulgence to press these humble sentiments upon your attention, and bespeak for them an attentive consideration, such as shall be commensurate with its importance.

It is, perhaps, known to most of you, that the name of Arkansas has become a by-word and reproach, upon which to heap every vile epithet that is degrading to a free and enlightened people. Why it is so, except from habit, I cannot say. Arkansas, not unlike most of the Western States of her age, has, perhaps by unwise legislation, placed herself and her people in the back-ground for awhile, and to some extent, and by that means, oppressed the energies of many of her best citizens; but the day is beginning to dawn, and a bright future is close at hand, when, by a change in our constitution and laws, we shall be relieved from our long-existing financial embarrassments, which have borne us down to such a degree, that our natural energies and immense resources cannot be made available for advancing either our manufacturing or internal improvement interests. Still, I am authorized to say, that we shall be able to survey, locate, and commence the work upon our portion of these proposed roads, as soon as the public policy of the country will authorize it, and the South-western States shall have decided upon and established a system, as a guide, if such should be their pleasure. It is with great reluctance that I state these things, or thus attempt to speak for the state in which I live, lest from incompetency, or a misapprehension of her real interests or policy, I might unconsciously err in my efforts to place her in the right position. Nor would I attempt to speak under any circumstances, except as at present advised there is no certainty that any of our distinguished citizens will be present from this portion of the state, to represent her in the Convention. No man, however intelligent he may be, can be fully aware of the facts that really exist in relation to the practical effects of internal improvements in a new country, unless he makes it a study; nor their means and their availability to build these roads, consisting, as they do, in a country like ours, of labor, teams, materials, provisions and money. The results to be obtained from their judicious application, expended, as they would be, upon the line of the work, would constitute it a self-creating fund, making every one stockholders, and wedding them, both in feeling and interest, to its success and security, repaying them back tenfold in the increased value given to their lands and movable property of every kind; nor is it easy, in reference to a "*main trunk line*," of the extent and dimensions of the one under consideration, to form any correct estimate of the local traffic and travel that will concentrate upon it; nor of the lateral business that would afford it support; nor of the through business which would pass over it, in consideration of its safety, certainty, economy and saving of time; nor any approachable estimate of the increased value it would give to land, and every other species of property, not only along the line of the road, but, both far and wide; and also the impetus it would give to all the agricultural, commercial, manufacturing, mechanical, and other industrial pursuits.

It would be both unwise and impolitic for the states through which these projected roads are to pass, to apply at this time for the direct aid of the general government in their construction, a useless application, inasmuch as the public policy of the country has settled down in opposition to it.

A commencement and vigorous prosecution of the proposed works, would soon elevate our standard, as an industrious, self-relying people, and place us in good credit. And now that the English rail-roads are all built, and large amounts of surplus capital accumulating there, to which we may add, the diminished character in the value of their annuities as a paying investment, would soon bring into the field of operation, as competitors, a new race of contractors, with abundant capital, who, doubtless, would be more than willing to construct at least a moiety of our roads, provided they were secured by a

lien upon them, properly sanctioned by our respective state authorities. It is, perhaps, known to you that the money to build the "*European and North American Rail-Road*," to an amount far greater than we would require, was obtained for but a mere fraction of interest above three per cent. But before this can be successfully attempted, it is absolutely necessary that we should begin the work ourselves, and carry it forward until the results upon these projected roads are so far extended, and the resources of the country sufficiently developed, to be an earnest, of both our intention and ability, to perform whatever we promise, without relying on contingencies to happen.

It must be apparent to every one present on this occasion, that the completion of such gigantic undertakings is a work of time, requiring the fortitude, energy, and iron will of American enterprise. Yet procrastination will be fatal to us, evincing to the world that we are unequal to the task of constructing a road through a level country, at no expense of the right of way, presenting no formidable obstacles in comparison to similar works in the Eastern States. If we hesitate now, it will be, in its effect upon the public mind, nothing less than an implied surrender of all the benefits to this generation of all such anticipated improvements, and a tacit assignment of all of our natural rights to other rival avenues of trade, that will start into life, grow with our growth, and gain fresh vigor from the impotency of our energies.

The construction of rail-roads is no longer a debatable question of policy; but the state that would preserve her prosperity, and secure her future progress in a comparative ratio with her sister states, must embark in similar enterprises, from necessity. The great strides of other states towards annihilating distance, by this means, should stimulate us to push forward our rail-road projects with renewed energy, and, as far as possible, bring to its aid the influence of every citizen in the South-western States.

The commercial intercourse between this country and Europe has hitherto been confined to New-York and other Northern cities, enriching them at our expense, until from affluence the South has reduced herself to a state of dependence. How this evil is to be remedied I leave, as before stated, to others more competent to exemplify, whilst I turn my attention to another matter, equally important in its particular relation to Southern advancement, which no one can fail to see at a glance in its most alarming and extended aspect; I mean the immense emigration now pouring in upon our Atlantic seaboard, which in its progress threatens to depopulate portions of Europe, and therefore becomes an essential element in the progress of population and wealth of the country. The South derives little or no benefit from such accessions, although their numbers, both in wealth and respectability, are increasing every year. When the line of ocean steamers, now building in the Eastern ports, shall have been completed, they will be far beyond any present estimate. These emigrants mostly land in the city of New-York and neighboring towns, from whence they readily find their way into the region of the far West, at trifling expense, through regularly organized emigrating societies, ever ready to change them from on shipboard to the railway lines, in an hour after their arrival, without any charge of cartage, and landing them in Chicago, for example, at a cost of only *seven dollars*, or at any other point in the same ratio, thus placing them in a few days in the centre of the fertile regions of the West, with all their money and effects, with health unimpaired. The few that find their way South, land on the levee, in New-Orleans, uncared for—take a deck passage on some steamboat bound up the Mississippi, to seek a home—and die in numbers of some prevailing disease of the country, or are blown up, or find a watery grave from the sinking of a badly-managed boat. The remedy for all this must be obvious to the most common understanding. And we cannot reasonably expect to secure any great accessions of that description of population, without making an adequate provision to invite them to our shores, in a corresponding ratio with other commercial points.

The last record of 250,000 emigrants, arriving in the Eastern ports, had about their persons in money, $20,000,000; and the previous register of 210,000, 10 millions of dollars. This may enable you to form some idea of the

great value we ought to attach to the acquisition of a proportion of that vast and swelling tide of population, pressing forward to find a home in America.

Another advantage, which should not escape your notice, is, that the cost of rail-roads in the South-western States is, from the nature of the ground, less than in the Eastern States, by full one-half—when we take into the calculation that the "*right of way*" is a gratuity. In this view of it, who can fail, in common with the public, to see the cheapness and great natural advantages these projected roads will possess over any others, and the vast results to be produced by their successful accomplishment. By means of them the home trade, and the value of that vast domain through which they will pass, will be enhanced. Upon the immense line, settlers of all nations will press, with ceaseless vigor, the moment the preliminary surveys are made, and soon a thriving population will fill every plain and valley; cities, towns, and villages, will spring up, as if by magic, adding strength and value to the work as it progresses, developing the energies of the whole population within its influence. The labor now in the country, with the increase that these new works will invite and bring to us, will be ample for all reasonable purposes, under judicious management, to build these roads.

The idea of filling up a new country with the hardy pioneers, ever pressing westward for a home, and settling them, free of cost, upon lands far in the interior, and away from any facilities affording an easy market for their products, is too absurd for any one to propose, even if the land were free of cost. If so remotely situated that the labor bestowed upon it can produce no results beyond a bare subsistence, a farm is not worth the labor bestowed upon it; and the demagogue who proffers it, but insults the intelligence of the settler.

If, however, by appropriating a portion of the public domain, the remainder can be made available to the settler, a real homestead will have been created for him that will be a rich inheritance. Manufactures, and all branches of industry, will spring up on the line of these roads, affording markets for the produce of the districts commanded by its lateral works. The experience of the great rail-roads now in operation in the older states, fully exemplify what we wish to arrive at—that if the effect, in a country already densely settled by a manufacturing population, is so astonishing, as every one present knows it to be, how much more effective will the same influence be in such a country as this, where all its natural resources remain undeveloped.

Your ob't serv't,

ROSWELL BEEBE.

Little Rock, Ark.

THOUGHTS ON THE PURPOSES OF THE CONVENTION.

I congratulate you and the whole country on the assemblage of your honorable body. I regard it as the commencement of a series of measures destined to exert a most salutary influence on our future destiny. The place selected is the proper one in all respects, and the time eminently propitious. New-Orleans has so many natural advantages, that she must always be exempt from much of the suspicion of undue selfishness, to which many other places might be exposed. With or without rail-roads, her majestic river and its mighty tributaries must always supply her with all the elements of boundless wealth and prosperity. What if other cities should occasionally penetrate a few interior valleys, and here and there make a few encroachments on her former commerce, the impression would be too slightly felt to impede her onward progress. The insignificant loss would be more than compensated by the increased stimulus which a general rail-road system would impart to the productive energies of the country.

But the place is not more favorable than the time is auspicious. The southern and western mind is now ripe, thoroughly ripe on all the subjects which I suppose will occupy your attention. These, I expect, will be chiefly, the devising of a proper rail-road system for the South and West; the introduction and encouragement of a more extensive system of manufacturing into the same region, and the encouragement of importations into our southern cities, and a direct

trade between them and foreign countries. On all these subjects, I repeat, the public mind is thoroughly ripe for decided action.

As to rail-roads, who that ever made one distant journey by water, that did not prefer dry land for the next? With or without cause for it, the universal passion of the age has become, to desert the water and to fly to the land—not only to fly *to* it, but to fly *on* it, at the rate of 40 or 60 miles to the hour. Even here in Tennessee, we who have been heretofore a patient and slow-moving people, (except in war times,) have been so quickened up that nothing but the iron horse and the telegraph will now do us. We are giving a hearty welcome to every rail-road that approaches our borders—our legislature is now granting charters to the Louisville and Cincinnati roads to Nashville, and from that point to the Great Bend of Tennessee, in a suitable direction to meet with the New-Orleans and Mobile roads, when extended to that river. We are, in fact, reaching out our arms in every direction, proffering an affectionate embrace to all. To none a more fraternal one than to our sister cities of the South—Mobile and New-Orleans. Let them come by their own ways to the Tennessee River, a little above or below where our state-line crosses it, and where all obstructions to navigation will be avoided, and we will shake hands across the stream with a cordiality that shall know no discrimination. But our legislature is not content with simply granting *charters*, and then leaving the projects to linger and perish, with no other than a mere statutory existence; she is proposing for all of our great (or as the technical word now is) our tidal lines, to advance to the companies her bonds at the rate of $7,000 or $8,000 per mile, for the purchase of iron rails, locomotives, and other fixtures of the roads. There is every probability that such liberal provisions will be made for them at the present session of that body. We are, therefore, profoundly in earnest: and Tennessee tenders to Alabama, Louisiana, and Mississippi, a generous rivalry as to who shall first reach the proposed point on the Tennessee River with the roads in question. I need not take time to point out the great advantages of such a line of road both to Mobile and New-Orleans. The Vicksburgh, Jackson, Brandon, and Montgomery road will be the first tributary. In northern Mississippi, I suppose not far from Jacinto, the Memphis and Charleston road would cross, which would be the second; at Nashville, the Chattanooga will be the third, swollen as it will be, by the junction at the latter place of the Charleston and Savannah, and of the Virginia and East Tennessee roads. A connection between New-Orleans and Mobile with the Ohio at Louisville and Cincinnati, with such tributaries as these, must be of the highest importance to the cities at their respective termini, and to the whole region of country through which the road would pass.

But it is obvious that a connection with Louisville and Cincinnati, however important, is not the only purpose of these two southern cities. They see with what steadiness of purpose South Carolina and Georgia are pushing forward their road, to some point on the Mississippi, at or near the mouth of the Ohio. They cannot be insensible to the consequences. If Charleston is determined to stand at the mouth of the Ohio, bidding for the amazing commerce of the Northwest, New-Orleans and Mobile will be compelled to stand there also, her rivals and competitors for the noble prize. I speak of competition and rivalry, of course, in no sense unworthy of those enlightened cities. That they may be there in good time to secure their just and fair proportion of advantages, I respectfully beg leave to make a few suggestions to both of them.

It is evidently impossible to make the important roads contemplated by them, and which it is perhaps essential to each, should be made without a heavy draft on the resources of both cities, and on those of the towns and people along the respective routes. Is it not, therefore, the part of wisdom and of a just economy in both, to avoid the construction of parallel and contiguous lines, such as would be two roads from any point of approximation in northern Mississippi to the mouth of the Ohio. To avoid doing so, I would suggest that the New-Orleans road from Jackson, Mississippi, to the Great Bend of the Tennessee, should be so located as to pass the point where the Mobile road to the mouth of the Ohio crosses the Memphis and Charleston road by Tuscumbia. This point,

I believe, is near Jacinto, in Mississippi. Now, from *that point* to the Tennessee River, in order to form a connection with the Louisville and Cincinnati road by Nashville, and from the same point north to the mouth of the Ohio, a road might and ought to be constructed by the *united funds* of both cities, or of the companies representing them, securing by proper covenants equal rights and benefits of every sort to both. More especially do I consider this to be important in relation to the road running north to the mouth of the Ohio. The distance will not fall much short of 175 miles, and the cost of its construction not much less than three millions of dollars. Half that amount is worth saving, and its division would lighten the burden on both, as well as on the intermediate towns and people who might be called on to contribute to its construction. The suggestion is made with a full persuasion that the road *can* be made by either, but with the strong conviction that a proper sense of economy and an enlightened comity of feeling, would evidently be consulted by a joint contribution to it.

I drop the subject of rail-roads, in order to suggest another on which the South and West are looking for your action with the highest interest: I mean the encouragement of manufactories—manufactories generally, but more especially of our great southern staple. You will never adjourn, I hope, without making the strongest appeals to our capitalists, and especially our planters, to engage in them. The latter can build the houses necessary with their own hands. Two or three, or half a dozen can unite in one establishment. They can select from their own stock of slaves the most active and intelligent ones for operatives, without the necessary advances in money to white laborers. The cost of machinery, and the expense of one or two others of practical experience to superintend the rest, will be nearly the only outlay of actual capital for the business. I earnestly desire to see one-fourth of southern slave labor diverted from the *production* to the *manufacture* of cotton. One-fourth of such labor abstracted, would give a steadiness and elevation of prices to the raw material, which would better justify its cultivation.

I have no time to elaborate this view of the subject; I but hint at it, and indulge the hope that it will be placed in the hands of one of your ablest committees.

In relation to the encouragement of importations into our southern cities, and of direct trade between them and foreign countries, I do not know that I can suggest anything valuable. When the South shall have completed a well digested system of internal improvements, connecting the interior with our southern ports, importations will come of themselves. Ability to furnish *assorted cargoes* will soon attract a direct trade to the full amount of the ability of our southern cities to accommodate it. This theme, also, opens too wide a field either for my present time or for the patience of your honorable body.

I therefore close this communication, with the most profound respect and confident expectation, that your deliberations will result in the lasting benefit of our common country.

Very respectfully,

Nashville, Tenn. AARON V. BROWN.

Your esteemed favor of 3d instant, directed to Graniteville, is before me, with an invitation to deliver an essay before the Rail-road Convention to assemble in New-Orleans on the first Monday in January next, on the subject of the extension of Southern and Western manufactures, and the influence which it will exert on the system of internal communication, which it is the object of the Convention to project.

I acknowledge my obligation to yourself and the several members of the committee for the honor which you have conferred upon me, and regret that your letter reached me too late to afford time, in the midst of a multitude of other engagements, to do justice to a subject of such vast magnitude. It covers a boundless and prolific field for speculation as well as practical observation; and I assure you, it is with unfeigned regret that circumstances beyond my control compels me to decline the honorable office of addressing the Convention on the subject.

The advancement of the mechanic arts, and diversifying southern industry, is a subject in which I have been engaged for years past. In order to keep pace

with the advances making everywhere in this utilitarian age, we must give up our notions of exclusive agriculture in the planting states, and turn more of our attention to those branches of industry, which will so diversify occupation, as to give a field for the development of the powers of every mind. It will tend to vivify the intellect of the masses, giving such vent to human ingenuity as will bring out the whole physical and productive force of our country, and give life and energy to the vast operations you have before you, and a sure basis for the future profit and usefulness of the rail-roads you contemplate building.

Without such a change in public sentiment as will direct capital into such channels, our soil will be worn out, and many of our now productive fields will be suffered to grow up in sedge-grass and old field pines, as is now the case in many portions of the old Atlantic southern states. Our commercial cities will remain stationary, while those of other countries will rapidly advance in wealth and population. Our accumulated mercantile capital will continue to leave us, in order to find more profitable sources of investment, instead of seeking employment in our own country by building manufactories, rearing villages, making rail-roads, and other improved means of intercommunication. All such investments made in a country act back on the cities that accumulate and furnish the capital. Thus, we may have action and reaction going on, giving strength to the sinews of our country, population and wealth to our cities, and terminate in that enviable state of things which Boston enterprise and Boston capital has produced in Massachusetts. The motto of the South should be, the Plow, the Anvil, and the Loom.

It is a prevalent but mistaken notion, that the Caucasian race of the South have not as much mental or physical energy to prompt industry as the same class of individuals at the North. It is true, that they are not fitted by nature to stand our broiling sun of the South, or even to exist in the pestilential swamps of the seaboard, where the African enjoys health, and seems to be at home.

The white man will never be an efficient field-laborer in our southern states; but when the now unemployed or unproductive white people of our country are looked on in a proper light by our great capitalists, they shall soon be brought to employ themselves in the arts which follow and cluster around the anvil and the loom. God speed the change which shall produce such a revolution as will fill every department of our commerce, manufactures, &c., with our own people! In such a state of things, with the aid of the African race to drain our swamps and speed the plow, we may become the thriftiest people on earth.

With great respect,

Charleston, S. C. WM. GREGG.

RALEIGH, *Dec. 5th*, 1851.

GENTLEMEN—

I very much regret that it is not in my power to accept your invitation to attend the Rail-Road Convention, which is to be held in New-Orleans on the first Monday in January. I regret this the more, as I have long had a desire to visit the valley of the Mississippi and its great commercial emporium, where you purpose to have your meeting.

Although not in my power to be with you, I shall participate with the most lively feelings of interest in your proceedings. Such a Convention of delegates from *the Southern and Western states*, cannot fail to elicit information of the deepest importance to the whole country. The immense amount of capital invested in rail-road improvements, as well in England as in the United States, places the system beyond all question as to its importance and utility; and to the energy, commercial knowledge, and business habits of practical men, the public are indebted for the development and adaptation of the system to the wants of every community. The Convention which you propose to assemble cannot fail to produce the most favorable results, as you bring together men of intelligence, capable of imparting the best modes of management, as collected from the practice of American and foreign railways; men qualified to give correct statements of what has been done, what works are in progress, what plans, both as to materiel, iron and construction, are most approved; thus collecting a fund of information of the highest practical importance to every section of the country. These considerations of themselves would fully justify the meeting of the Convention; but the great point is, in seeing New-Orleans, the favored depot of the immense products

of the mighty West, taking a lead in the great work. Other markets less favored may, by their energy and enterprise, turn the system to their advantage; but these must serve as feeders, in order to collect and concentrate the whole to that point which has been designated by the God of nature and the past experience of man.

The Convention, I trust, will not confine its labors to the advancement of the rail-road system alone, but extend its views to our foreign trade and commerce. With the great staple of cotton at their command, most surely, Charleston and New-Orleans should be to the South and West what Boston and New-York are to the East and North, Philadelphia and Baltimore to the middle states. I should gladly present my views on this interesting subject, but that I know others will be in attendance on the Convention better qualified than myself, with the opportunity of freely conferring with each other, and of thus doing justice to the question.

I am happy to inform you, that the spirit of improvement has been awakened in my own state, and that we now have in construction two great connecting rail-road links; the one running through the eastern section of the state, via Wilmington to the Charleston road; the other via Raleigh, Columbia, and on south, which will secure not only the travel from north to south, but serve for transporting the produce of the interior of our state to their proper home markets.

Allow me to renew my regrets that professional engagements will deny me the pleasure of being with you, and to express my sanguine anticipations that the most happy results will follow the labors of the Convention.

I am, gentlemen, with high respect, your obedient servant,

R. M. Saunders.

Messrs. Burke, Crossman, etc.

THE JACKSON RAIL-ROAD.

To the Stockholders of the New-Orleans, Jackson and Northern Rail-Road:

Gentlemen—The Permanent Committee of Ways and Means, appointed in April last by the Convention of the New-Orleans, Jackson and Northern Rail-Road, respectfully submit the following report of their proceedings:

The committee, immediately after their appointment, proceeded to the discharge of the duties imposed on them, in accordance with resolutions adopted by the Convention, viz.: To devise the means necessary for the construction of a rail-road from New-Orleans to Jackson, in the state of Mississippi; and, for that purpose, to organize a rail-road company under the general incorporation law of Louisiana.

An examination of the act of March 16, 1844, entitled, "An Act for the organization of Corporations in this State," convinced the committee that it was impossible to form a rail-road company under its provisions. This fact is clearly established in the report of a sub-committee appointed to investigate the subject, a brief recapitulation of which is here given, although the whole report has already been submitted to the public through the press. The sub-committee say:

"That after the most earnest efforts, they have been unable to devise any means for forming an organization under the present legislation of the state, that will afford the slightest prospect of success in obtaining subscriptions; and that the difficulties which embarrass undertakings of this nature, render any scheme of internal improvement utterly hopeless, until some modification of the incorporation law shall have been made. The whole spirit of this law reveals the state of public feeling at the time of its passage. It is composed of twenty-six sections, filled with the most minute provisions relative to formalities to be observed, and restrictions to be imposed, on the companies to be formed under its enactments. So far as regards such companies as are intended to forward works similar to that which we propose to undertake, the title of the law would form a better index to its provisions, if the act had been declared to be intended 'to prohibit the organization of corporations in this state.'"

The sub-committee then refer especially to some of the sections alluded to in the preceding remarks, and show that subscription books can only be opened in one place, thereby precluding the obtaining of subscriptions by lists, to be carried round to the inhabitants of parishes where the line of the road is to pass; that the act of incorporation must be executed before a notary, and a copy of the same be deposited in one of the district courts, with a petition for its homologation; that thirty days' previous notice of the application to the district court shall be published, when any individual in the state may make any opposition, in all probability thereby delaying the action of the company from one to two years; that no rail-road company shall have the right of expropriating property without the express authority of the legislature previously obtained, nor of entering into the limits of any city or incorporated town without the sanction of the authorities, so that if a single proprietor on the line refuses a passage, although offered the full value of his land, or a municipal corporation refuses an entrance into its limits, the work must be stopped; that twenty per cent. must be paid in cash by each subscriber at the time of subscription; that the municipal authorities of the parishes, cities or towns, where such corporations exist, shall have the right to fix the rates of toll or fees; and that the agreement for the corporation, when made, shall not be construed or interpreted as a contract with the state; but that the legislature shall have, at all times, the power to alter and amend the law, and apply the amendment to pre-existing corporations.

The sub-committee further say:

"That any individual in the state would invest his capital, under such conditions, is scarcely to be expected; that an adequate subscription for our purposes can be obtained, is utterly impossible.

"Your committee, therefore, abandoning any attempt to adapt our project to the provisions of the law, and confident that the spirit now awakened amongst our people will lead to its repeal at the next session of the legislature, respectfully recommend as follows:

"1. That an act of incorporation be framed in accordance with the best precedents in our sister states, and with the previous legislation of our own.

"2. That lists be circulated for subscriptions to such a charter, with an agreement that the subscriptions are only to be binding when the sanction of the legislature shall have been obtained; but that, in the meantime, the subscribers agree to advance five per cent. on each share, to be employed in the necessary preliminary expenses of survey, location, &c.

"3. That a memorial be presented to the legislature, praying for the enactment of a corporation law, on an entirely different basis from that now in force, and providing for the facile combination of the capital and labor of the citizens of the state, who are willing to embark in enterprises of public improvement or utility."

In accordance with the suggestions of the sub-committee, an act of incorporation was drawn up, providing for the formation of a company, to be called "The New-Orleans, Jackson and Northern Rail-Road Company," the object and purpose of which was declared to be the construction of a rail-road from New-Orleans to Jackson, Miss., on such a scale as to serve for a main trunk of a continuous line of communication between New-Orleans and the Northern and Western portions of the confederacy. The capital of the company was fixed at two millions of dollars, divided into shares of twenty-five dollars each, with the right on the part of the stockholders of increasing the capital, if found necessary, provided such increase were sanctioned by a vote of two-thirds of the stock represented, at a meeting of stockholders held for that purpose. It is not deemed necessary here to repeat all the provisions of the charter, as it has been printed and extensively circulated, both in the public papers and in pamphlet form. The proposed charter was accompanied by an agreement, which has been signed by all who have subscribed for stock. This agreement provides that the subscriptions shall become binding, only in case the legislature of the state shall, at its next session, make such change in the laws as shall render the proposed act of incorporation legal and valid; and shall empower the several municipalities, and the cities and parishes on the

line of the road, if the voluntary subscriptions prove insufficient, to impose a tax on real estate for its construction, which tax shall be sanctioned by a majority of the voters of the places taxed, and shall be reimbursable to the tax-payers in stock of the company. It further provides for the payment, in advance, of the first instalment of five per cent. on the amount of subscriptions, to be expended solely for the necessary preliminary expenses in the location, &c., the road, plans, printing, &c.

It appoints the Permanent Committee of Ways and Means a Provisional Board of Directors; to act in obtaining the organization of the company, employing proper engineers for surveys, reports, plans, &c., and obtaining all the requisite information on which to base the final action of the company to be formed under the charter; and it gives to said Provisional Board of Directors the sole power of expending the money advanced.

Books of subscription were opened in May last, and within thirty days about $400,000 of the stock was taken. The following is a statement of the receipts and expenditures to date:

Amount collected on account of first instalment		$11,959 00
Paid to sundry papers for printing, &c.	$1,152 25	
Paid for books and stationery	47 00	
Paid Corps of Engineers, surveying party, &c.	7,500 00	
Paid commissions for collecting	300 00	8,999 25
Balance on hand		$2,959 75

Early in the summer of 1851, the committee prepared and published an address to the people of Louisiana, the object of which was—

To develop and explain the principles on which it was proposed to organize the New-Orleans, Jackson and Northern Rail-Road Company.

To show that, while the whole valley of the Mississippi, the natural tributary of New-Orleans, has been rapidly increasing in wealth and population, the commerce of the city has been gradually dwindling away; and that if she would regain the trade she has lost, and open new sources of opulence and power, it will be necessary to modify the laws of the state, in such a manner as to remove the restrictions and burthens now imposed on capital and enterprise; to reform our municipal affairs by the establishment of an economical and efficient government for the city, which shall restore her credit, now utterly prostrated; to encourage manufactures; to employ steamships, and establish a direct foreign commerce with countries requiring the staple productions of the great valley; and, more important than all, to make liberal appropriations for rail-roads leading from New-Orleans, and connecting with the vast system of rail-roads now projected and under construction in the neighboring states; to establish the fact that the legislature has constitutional authority to grant to all municipal corporations power to tax the property within their limits for the construction of works of internal improvement; in proof of which, the decisions of the highest courts of law in Kentucky and Tennessee on the side of its equity and constitutionality are cited, as well as the examples of such taxation in Virginia, Tennessee, Kentucky, Alabama, Connecticut and elsewhere; to excite a spirit of enterprise in the people of this state, and stimulate them to action, by examples of the uniform and unfailing increase in wealth, commerce and population, of every portion of the country, without exception, where rail-roads have been established.

The committee have reason to believe, that the publication of the address to the people of the state has been attended with beneficial results. It has had the effect of removing the prejudices of some, and dispelling the ignorance of others; while a feeling of emulation has been awakened in the great body of our fellow-citizens, by examples of the sure and speedy reward which in other states has ever followed well-directed enterprise.

A sub-committee, called the Committee on Surveys, was appointed in May, for the purpose of superintending and directing the operations of a corps of engineers which took the field in June, and was actively employed until the 23d ult. The

following report was submitted by said committee at the last meeting of the Board:

The Committee on Surveys have the honor to report to the Board of Directors of the New-Orleans, Jackson and Northern Rail-road Company, that, agreeably with instructions of the 15th of May, immediate measures were taken to organize a corps of topographical engineers, to survey carefully the several routes which had been suggested as most suitable for a rail-road from New-Orleans to Jackson, Miss.

The extensive surveys and very complete information obtained by the old New-Orleans and Nashville Rail-Road Company, rendered the duties of the committee comparatively easy. The location of that rail-road along the valley of the Tangepahoa, was taken as a base line, from which our operations were made.

A party, fully equipped for field operations, under the direction of Mr. Henry Waller, civil engineer, a gentleman of much experience and professional skill, left New-Orleans for the state line on the 12th of July, and commenced their surveys at the junction of McGee's Creek and the Bogue Chitto, about two and a half miles north of the state line. From this point, a line in a southwesterly direction was traced, connecting with the old Nashville line, which crossed Pass Manshack, and an extension, connecting also with the survey of Mr. Phelps around Lake Maurepas. These surveys were made to enable the Board of Directors to assure the stockholders and the public, both of Louisiana and Mississippi, that the idea of building a rail-road across the valley and intervening ridges of the Tangepahoa, Chappapela, Chefuncte and Bogue Chitto, to Pearl river, approaching Jackson by the valley of said river, was inexpedient when viewed either with reference to cost or mechanical efficiency.

The committee beg leave to state, that it is the unqualified opinion of their engineers, that the best line of rail-road from New-Orleans to Jackson, must be located west of the Tangepahoa, and approach the last-named city, after entering the State of Mississippi, between the Tangepahoa and Tickfaw, to the common summit of those streams and the Bogue Chitto; and thence, descending the western slope of the valley of Pearl river, to the city of Jackson. A copy of the lithographic map of Major Ranney, which is herewith presented, exhibits the line described.

Having carefully surveyed every probable route east of the Tangepahoa, our engineers were ordered westward, to examine the ridge between the Tangepahoa and the Tickfaw; also the valley of the Tickfaw. The result of these investigations leads us, without doubt, to the conclusion, that, after reaching the high lands on the north side of the lakes, the true route of the rail-road will be found, as formerly located, along the valley of the Tangepahoa. Whether the rail-road shall pass from New-Orleans to high land by the old Nashville location, between Lakes Pontchartrain and Maurepas, or whether a line shall be adopted around the head of Lake Maurepas, is still regarded by the committee as a doubtful question, to be decided after very mature reflection. The line between the lakes is seven miles and a half shorter than the line around Lake Maurepas; will require one draw-bridge, but passes over more swamp land, and does not afford the same amount of local accommodation. The line around Lake Maurepas is more exposed to the influence of crevasses; will require three draw-bridges; is on better ground; but increases the distance, as before stated, seven miles and a half. The committee, however, feel authorized to assure the Board of Directors, that no serious difficulties exist on either line. The bridges may be constructed on piles; and those portions of the road which pass over low swamps, may, in the first instance, be also constructed on piles and trestles, and afterwards filled up with sand and clay, to be transported on the rails, at a moderate cost, from the north shore of the lakes.

The Committee on Surveys have also procured from the General Land Office, a copy of the United States Land Surveys, embraced between, and including, ranges five and eleven, from the state line to the Mississippi River. The government plans have been reduced to a scale of one inch to a mile by an accurate instrument, and embodied in a map of convenient size, on which is distinctly shown every section and fractional section of land, whether vacant or occupied. The map also embraces the surveys which have been made for rail-roads, including profiles of several of the principal routes. Profiles and plans, on a working scale, of the surveys made by Mr. Waller, have been deposited by him with the chair.

man of the committee; also, books containing all his field-notes. The committee take great pleasure in acknowledging the skill and fidelity with which Mr. Waller, and the gentlemen under his command, have discharged their duties. During the summer months, much sickness prevailed, both among officers and men; but the surveys were never suspended; and during the autumn months our operations were retarded by heavy rains, and the miserable condition of the swamps between the lakes and the banks of the Mississippi River.

The committee beg leave to acknowledge their obligations to Major Ranney for a large amount of valuable information connected with the duties assigned them He has placed at the disposal of the committee his finished maps of the location of the old Nashville Rail-Road to the state line, and also his maps and notes of experimental surveys reaching to the Tennessee River. These surveys were made under the personal direction of Major Ranney, in 1835, aided by a large and most efficient corps of assistants; and the committee find great satisfaction in stating to the Board, after a careful examination of these documents by their chairman, that a continuous line of rail-road from New-Orleans to the Tennessee River may be constructed with less labor, and with superior mechanical efficiency, than any other rail-road of the same length either in America or elsewhere. The line will be very direct; and where deflections are required, the curves may be made so gentle as to be regarded, for practical purposes, *straight lines;* the dividing ridge, or, more properly, the table-land, between the Gulf of Mexico and the Tennessee River, may be crossed by grades not exceeding, in any instance, sixteen feet to the mile; while three-fourths of the line will be level, or with grades within ten feet to the mile.

The superiority of this line will give to the trade of the Gulf of Mexico a vast advantage, in comparison with that which passes to the Atlantic over the high grades and strong curves necessarily encountered in winding a way from the western to the eastern side of the Alleghanies. An engine will transport more than double the freight from the Tennessee to New-Orleans or Mobile, and at a higher velocity, both for freight and passengers, than can be effected on any line of rail-road leading from the great valley to the Atlantic. The length of our road should be a subject of congratulation; for while, at its farthest point, we may compete successfully with any other commercial community, we build up and secure an immense intermediate trade peculiarly our own, and which none can ever divert from us.

The Committee on Surveys present to the Board of Directors this hasty report, embodying only general facts, in order that the Board may be made acquainted with the satisfactory results which have attended our investigations. Our surveyors only returned to the city on the 23d of December, after five months' absence on field duty. It will require a short time to bring up their office work, when the committee will present a report in detail. The Committee on Surveys cannot close this report, without acknowledging the satisfaction they experienced in the belief, that there is no difficulty of a serious character to be encountered in the construction of a great trunk rail-road from New-Orleans to the Tennessee River, where we will engraft on our stem the vast system of branches now being extended throughout the land.

All of which is respectfully submitted.

W. S. Campbell,
Chairman Committee on Surveys.

NEW-ORLEANS AND OPELOUSAS RAIL-ROAD.

ENGINEER'S REPORT.

To Messrs. M. M. Cohen, P. Simms, M. O. H. Norton, A. Lanfear, Maunsel White, J. W. Stanton, and B. H. Payne, Executive Committee on New-Orleans and Opelousas Rail-Road:

Gentlemen:—

Agreeably to your request and instructions, I have, with the assistance of Dr. W. S. Smith, surveyed that portion of the route of the contemplated New-Orleans and Opelousas Rail-road lying between Thibodaux and Berwick's Bay, and submit to you this, my report:

We first fixed on a point supposed to be the most eligible for crossing Bayou Lafourche, about a quarter of a mile above the corporate limits of the town of Thibodaux, which point is 15 chains and 70 links below the upper line of the plantation of Judge Guion.

From thence, for nearly 5 miles, we directed our course so as to follow a ridge of high land, known as the Pointe aux Chênes; at this distance the ridge turns so much westward as to be no longer available. We then turned the course a few degrees to the right hand, running through a cypress swamp two miles and a half across, striking the nearest point of high land on the Chucahoula ridge. This last mentioned swamp has a firm, hard clay bottom, with crevasse water-marks varying from three to four feet, and in a few sloughs, five feet water-mark. In the summer season this swamp becomes entirely dry, but now has on it water averaging one foot in depth. It is my opinion this swamp might be drained and kept most generally dry, by making a sufficiently large canal across the Chucahoula Ridge into Bayou Tiger, at a point where the distance would be but about one-half a mile in length.

Thence our line curves still more to the right hand, running along the Chucahoula Ridge about four miles, and enters a cypress swamp similar to the one last described. This swamp it crosses in a distance of $\frac{3}{4}$th of a mile, striking a low and narrow ridge of land on the Bayou Tiger. Following this ridge, twice crossing the Bayou Tiger, at 13 miles from Lafourche, we arrived at a point on the right bank of Bayou Black, opposite the town of Tigerville.

It will be observed, also, by referring to the annexed sketch, that the line thus far crosses the Bayou Chucahoula four times; but this bayou, as well as the Bayou l'Ours, hereafter referred to, is very small and hardly observable, being what is generally termed a dry bayou.

Thence from opposite Tigerville, crossing a little to the left, the line runs along the high lands of Bayou Black two miles and a half, thence curving slightly to the right across the high lands of Bayou l'Ours one mile and a half, and enters a cypress and tupelo gum swamp, lying between the high lands of Bayou l'Ours and Bayou Bœuf.

This swamp has crevasse water-marks from three to four feet, and is less firm on the surface than those previously crossed on our line. At a depth of from six to twelve inches below the surface the ground is tolerably firm, being clayey, or what is here generally termed "terre gras." The line across this swamp is a little more than two miles in length, and that near the middle crosses a small draining bayou, the bottom of which is boggy.

Leaving this last mentioned swamp, and passing over cultivated land, at 19$\frac{3}{4}$ miles from Lafourche, we arrived on the east bank of Bayou Bœuf. This bayou is 590 feet in width, banks 8 feet above tide water, and has a gentle current each way according to the tide; difference between ordinary high and low tides about 18 inches.

The soundings across Bayou Bœuf, on our line from the east bank, and taken at a moderately low tide, and at nearly equal horizontal distances, were as follows: 4 feet, 7$\frac{1}{2}$ feet, 12$\frac{1}{2}$ feet, 15 feet, 15 feet, 15 feet, 15 feet, 15 feet, 14 feet, 10 feet; the two extremes being about 50 feet from the banks.

Thence the line continues in the same direction over cultivated land a little more than half a mile, and enters a palmetto, ash, and cypress swamp, having on it but little surface water, with a very firm clayey bottom, and three feet crevasse water-mark. Crossing this swamp in a distance of about a half mile, the line enters upon the high lands of Bayou Bœuf again. Thence the line passes over said high land, mostly in cultivation, crossing Bayou Ramos at a distance from Lafourche of 22$\frac{1}{2}$ miles nearly, and reaches Berwick's Bay at a distance of 26$\frac{1}{4}$ miles from Thibodaux, of which, say 5$\frac{1}{2}$ miles is through level overflowed swamp land, and the balance on high, level, and arable alluvial lands.

On this route there will be required several culverts across small bayous and drains, not involving heavy expenditure, and in addition five bridges, viz.: two across Bayou Tiger, which is 60 feet wide and 8 feet deep; one across the draining bayou in the swamp between Bayou l'Ours and Bayou Bœuf, which is 150 feet wide, and from 1 to 3 feet deep; one across Bayou Bœuf, the cross section

of which is given above; and one across Bayou Ramos, which is 360 feet wide and 6 feet deep.

The country traversed on this route is all very nearly level, no portion being more than 15, nor less than 2 feet above tide water. Consequently no cuttings will be required; nor embankments, except in the swamp portions, sufficient to elevate the road above the highest crevasse water, and in other portions to secure a good foundation.

About one-half of the whole length of the route is on arable land, never overflowed, and the other half on land subject to immersion from 1 to 4 feet, in times of extreme high water of the Mississippi River, caused by breaks of the levee in the parishes of Point Coupee and West Baton Rouge. It might be supposed that an embankment, such as it is proposed to make, would operate as a dam, causing injury to the lands above it, as well as to the work itself. Such would not be the case, because the great area over which this crevasse water extends, and the level surface of the country in all directions, mostly a dense forest, gives to the overflow more the nature of a lake than that of freshet inundation. The culverts and bridges proposed on the route will be amply sufficient to allow the water to maintain nearly the same level on each side of the embankments.

I am in possession of data sufficient to estimate closely on every portion of the road between Thibodaux and Berwick's Bay, with the exception only of the bridges. The time allowed for making the survey was not sufficient to permit me to bore or sound the bottom of the bayous requiring bridges, and consequently only an opinion can be hazarded as to their description or cost.

Many engineers and others are of opinion, that the best manner of building rail-roads across overflowed swamps similar to those on this line, is on a construction of trestle work. I conceive that a more substantial and cheaper road-bed can be obtained by throwing up solid embankments of earth, and I have estimated accordingly, giving them such a height in the swamps as to be more than one foot above the highest crevasse water-marks, and on the other land so high as to secure at all times a solid foundation.

ESTIMATES.

Cutting trees and clearing roadway	$ 8,600
All embankments and grading	36,890
Lumber for mud sills and cross ties	32,020
Iron rails 63 lbs. per lineal yard, spikes and chairs	112,750
Labor on superstructure	32,100
Add 10 per cent. for contingent expenses and engineer's department	22,236
Total (equal to $9,144 per mile)	244,596

In addition to the above, there must be allowed for bridges, culverts, and depots, or warehouses, a sum which will add to the cost of the road probably not exceeding $1,200 per mile.

Your instructions required me to examine another route, commencing at the junction of Bayou Shaver and Bayou Bœuf, and following eastward on the south side of Bayou Bœuf, crossing the Bayou Chene; thence on south side of Bayou Black and crossing Bayou Crocodile; thence on or near the south boundaries of townships 16, ranges 14 and 15, to Bayou Black again; thence on the high lands of Bayou Black to a point in T. 17, R. 16, and then crossing over to Bayou Black again near the eastern junction of it and Bayou Chucahoula, and thence up on the high lands of Bayou Black to Thibodaux.

This last described route is certainly worthy of consideration and examination, by reason of its passage through a district of country which might afford much local business to the road; and, before any location of the road shall have been positively determined on, it ought to be surveyed in detail. Time was not allowed me to make this survey, as ordered in your instructions, and make out a report thereon in season to be submitted to you previous to the meeting of the Convention.

The distance between Thibodaux and Berwick's Bay, by the route last

described, would be between 38 and 40 miles. From previous knowledge of some portion of it, and a recent examination, without instruments, of other portions, I am of opinion that the route, (with the exception of one particular locality of the extent of about 2 miles,) is entirely practicable, but would cost as much or more per mile as the more direct route, first described, and which is some 12 miles less in distance.

The question then would present itself, whether the additional local business of the longer route would justify the outlay of its additional first cost of construction, and also the additional charge on all the business of the road from and beyond Berwick's Bay, in all future time. On the longer route many more curves would be required than on the other, consequently less velocity in transit could be obtained with the same degree of safety. Those only who are practically acquainted with the working of rail-roads, will give due weight to this comparison.

Another thing to be considered, and one I think of much importance, is, that the longer route, terminating at Bayou Shaver, would forever preclude the proposition of crossing Berwick's Bay on a permanent bridge. Most persons, I am aware, are of opinion it is not practicable to do so. In order to satisfy myself, and others who may be inclined to investigate the matter, though not required by your instructions, I have taken a cross section of the bay, above the mouth of Bayou Bœuf, the result of which is shown on the annexed sketch. This proves clearly to my mind that if the bottom shall be found sufficiently firm, a permanent bridge can and certainly will be constructed across the bay, sooner or later, if the road shall ever have any considerable extent or business. At first, it may probably be advisable to cross Berwick's Bay by means of a floating-bridge; and if it be so decided, then the road should be located near the bay, as is represented on the annexed sketch by dotted lines, in order to avoid a mud-flat on the eastern shore of the bay.

Your instructions also required me to survey the route for a branch from the main road to the town of Houma, in the Parish of Terrebonne. I have projected on the sketch, in dotted lines, two different routes, either of which may be selected. The shortest follows over cultivated lands on Bayou Terrebonne, being in length about fifteen miles, and the other over cultivated lands, mostly on Bayou Black, having a length of about seventeen miles. The longest route would afford the greatest amount of local accommodation, and that being the main object of a branch, it would, most probably, be preferable.

The annexed sketch represents the leading features and results of the survey I have made of the route, and the adjacent country, but does not by any means represent the particular details obtained. You had expressed a desire to have something tangible to present to the Convention respecting the portion of the route confided to my examination, and I have complied with your request, although the limited time allowed prevents me from doing justice to either the work or myself. This report, and the accompanying sketch, may be relied on as far as they go; but had more time been allowed, both might and ought to have been given much more in detail. My field notes of the survey describe everything observed on the route necessary to a correct understanding in the premises, and shall be carefully preserved, subject to the uses of any company when organized.

I herewith, also, transfer to you a memorandum-book, in which the landed proprietors on the route have made a gratuitous donation of the right of way for the road. This document was willingly signed by every person to whom I presented it; being every person owning land on the route found at home, with only one exception.

To conclude: it results from my survey and investigation, that a route for that portion of the proposed New-Orleans and Opelousas Rail-Road, lying between Thibodaux and Berwick's Bay, has been found much more favorable, either as regards the nature of the ground intervening, or as regards its approach to an air line, than had been expected. There are no formidable obstacles to be overcome, and, in my opinion, the whole work may be constructed between said points, in the most durable and permanent manner, including bridges, culverts, station-houses, and depots, sufficient for the working on the road, at a cost not exceeding two hundred and seventy-five thousand dollars.

AUGUSTUS S. PHELPS, *Civil Engineer.*

City of Lafayette, Dec. 29th, 1851.

NEW-ORLEANS AND OPELOUSAS RAIL-ROAD.

M. M. COHEN, ESQ.,
Chairman of Executive Committee:

I have the honor to submit herewith, a Report of so much of the Survey of the Route of the Rail-road to Opelousas, as the limited time I have had would permit.

After having received the appointment as Chief of the Survey, I prepared to go to work at once. But, as not only the importance of the work, but the unknown nature of the country between Algiers and Thibodeauxville, required a reconnoissance before determining where the surveys should pass, I proceeded from Algiers to Thibodeauxville, in company with W. T. Thompson, Esq., Assistant Engineer.

Our route was up the river to the Barrataria Canal; down the canal through Lake Washa; up the Bayou des Allemands to Lake des Allemands; through the lake, down Bayou Bœuf, six miles, to its juncture with Bayou Cabanosa or Chegbee; up Bayou Chegbee to Laforests and Scuddy's plantation, and from thence to Thibodeauxville. This route crossed the direct line on the Bayou des Allemands, passing south of it on the eastern portion, and north of it on the western portion, leaving the other sides for a future reconnoissance. The result of our observations and inquiries was, that a line could be run in nearly a straight course between Algiers and Thibodeauxville. A party was organized by Mr. Thompson, and the survey commenced. He has been untiring in his efforts to get through; but such has been the numerous and various difficulties with which he has had to contend, and which will be detailed in his report, that he has not been able to finish the survey. Another party, under Mr. T. Gillespie, was afterwards formed, in order to expedite the work, and the survey commenced from Bayou des Allemands towards Thibodeauxville. During this time, I was engaged in a reconnoissance of Bayou Bœuf and the adjacent country, as far down as Lake Bœuf. I then proceeded with Mr. Gillespie to meet Mr. Thompson on the prairie, by way of Lake Washa, Lake Catawasha, and Lanoux's Canal. My object was to reconnoitre the prairie in its broadest part, which was effectually done, although with much personal inconvenience in getting through the prairie.

The line determined upon for the survey, was decided upon after the first reconnoissance, after mature deliberation, and for reasons which I shall briefly explain in the subsequent part of this report. Its direction is as follows: Commencing at Algiers, on the river bank, at Verret's Canal, where the levee is very small, and down the canal until opposite the commencement of the bend of the river; thence round the bend, at the distance of 4,000 feet, to the rail-road on Millaudon's plantation, on the ridge of the Bayou des Familles; thence, in a direction south, 78¾ degrees west to the Bayou des Allemands; thence due west, crossing Bayou Bœuf, between Bayous Tortue and Baton Pilon, to a point one mile from Bayou Lafourche, and opposite the point of starting of the second division; and thence to the Bayou Lafourche. The curves in this line are, beside that from Gretna to Millaudon's, the one joining this curve to the straight line to Bayou des Allemands, another at the Bayou, and another at Bayou Lafourche, and are so easy as hardly to be noticed. It will be seen, by referring to La Tourette's map, that a right line from Algiers to Thibodeauxville would be impossible, without crossing the river. By commencing at Verret's Canal, and passing as above described, it runs on the best route, without interfering seriously with any of the plantations.

The straight line from Millaudon's to Bayou des Allemands was chosen, as being the most favorable ground, and as running to the best point for crossing the Bayou—there being three islands there; from thence to Thibodeauxville is an experimental line, and subsequent surveys may possibly cause the route to pass a mile or two further north. The distances have not all yet been measured: the aggregate will not vary far from 51 miles. The nature of the country is, from Verret's canal to Millaudon's, cypress swamp, good foundation, with marks of crevasse water from nothing to three feet. From Millaudon's to Bayou des Allemands, except the first two miles, may be called the Great Prairie. It is twenty miles long, and is a low, marshy prairie, interspersed with narrow ridges, of a few

inches high; and its northern border pierced by ridges not subject to overflow. A detailed survey of this country is required to connect these ridges, so as to determine whether a deflexion of the line would be advisable. The growth upon the prairie is reed grass, from ten to twelve feet high, and saw grass nearly as high—and both so luxuriant as to be very difficult to pass through. I was eight hours going six miles through it, with two stout men to beat it down before me; and the surveying parties cannot go over three or four miles per day. The ridges, on the border, are well wooded; and the cypress bottoms also extend some distance beyond the line, at several points. The soil is generally moist, but firm enough to bear up men at all times, and cattle in dry weather. The soundings gave me hard clay bottom at ten feet depth; this is a general feature of the prairie, in its whole extent—but there are some places which appear to be the beds of bayous choked up, which are very boggy, and impossible to cross on foot, but can be got over by crawling, or by light bridges. There are portions of the prairie called "Trembling or Floating Prairies," but not to any great extent on the line, or near where it should pass. They are principally in the south-west portion of the prairie, between Lakes Washa, Catawasha, and Little Lake des Allemands. They are, in my opinion, small ponds, which, being protected from the winds by the rank grass of the prairie, have been overgrown with weeds, until sufficiently firm to bear a man's weight. The thickness of the crust is about eighteen inches, and the water underneath about ten feet deep, with hard bottom, corresponding with the firm foundation of the prairie. The prairie is kept wet by the water from the lakes being driven upon it by high winds. Its luxuriant vegetation indicates its richness; and, if properly leveed and drained, it would be most valuable farming land. In its present condition, it is only a hunting ground for the planters and others.

The route of the line is intersected by numerous bayous, some of which run into the lakes, and others lose themselves in the prairie. Up to this time, the "prairie" has been a *terra incognita* to most people, and represented as impassable in every direction. Although I have been around, and across, and even *under it*, I am not prepared to give a full map of its surface, showing all the canals, bayous, ponds, floating prairies, and forests; and much more elaborate surveys should be made, to make such a map as is required. The best time for such a survey is in the winter or spring, when the reeds are burned off, and the mosquitoes are less abundant—and with men of iron nerves and constitution. The prairie, on the west side of Bayou des Allemands, is only four miles wide, and is of the same character as on the east side. Bayou des Allemands, at the points of crossing, is above three hundred feet wide, in the eastern shoot, with twenty feet deepest sounding; and two hundred and fifty feet in the western shoot, with fifteen feet deepest sounding. The island is one hundred and ninety-six feet wide—firm land, without timber. The current is affected by the winds, which cause a rise or fall of about two feet. From Bayou des Allemands to Bayou Bœuf, is cypress swamp, on each bayou, with the prairie between. From Bayou Bœuf west, is four miles of cypress, gum, ash, and maple swamp, with good bottom; thence to Bayou Lafourche, high forest land, with occasional bayous. Bayou Bœuf is about one hundred and fifty feet wide, with a depth of seven to ten feet. Its current is gentle, but constantly towards Lake des Allemands. The waters of Lake Bœuf pass into this bayou by a canal, which imperfectly drains it. Bayou Lafourche, at Thibodeauxville, is 230 feet wide at surface of levee, and twenty-six feet deep.

Throughout the route, I found marks of crevasse water, in some places over four feet, and over five in some bayous in the cypress swamps. It is the mark of the Fortier crevasse, and extends to the high lands of the Lafourche. *There*, the Cantrelle crevasse came up to the clearings of the plantations. It becomes, therefore, an important question as to the nature of the railway; and, after careful inquiries and examinations, I have come to the conclusion that an embankment cannot be considered, because, not only that it would block up the waters of a crevasse on to the river plantations, but that it could not stand. I have particularly examined the banks of the Barrataria and of Lanaux's canals, with a view to this subject. They are now very near the level of the prairie, although built about six feet high. The earth is melted away, or sinks down by its weight; and it is further destroyed by water rats, otters, and alligators, which abound; so that unless these causes can be destroyed, by complete drainage, no levee can be built which would endure long, as required for a rail-road. The foundation must, therefore, be a frame work of ron, or wood, six feet above the general level of the route.

Iron is too expensive for the present, and must therefore be replaced by cypress, which, if properly chosen from the low lands, will last long.

The expense of constructing this portion of the road will be much heavier than farther west; and must be estimated, at least, $15,000 a mile. This estimate would have to be made at the same rate to go up the river, as the nature of the country between the points of the river is the same as a portion of the straight line—namely, cypress swamp and prairie; and the distance between the points, in the aggregate, would be nearly, or quite equal to the straight line route. I assume, as a matter of course, that a straight line is the line to be chosen, if practicable. And I have not varied from it, except for good reasons.

Time has not been sufficient to make such a detailed survey as the magnitude of the work requires; but when it is considered, that since the 2d of December, there has been at least 25 miles measured out of 50, on which the line runs; and, considering the difficulties of supplying the surveying parties with provisions, I hope that the committee will see that the work has been pushed. Out of 27 days, I have been 20 days actively engaged in the field, and at all times engaged in the business of the survey. Mr. Thompson has not lost a day since the 2d of December, except by circumstances unavoidable; and he is still in the field. I beg leave to recommend him and Mr. Gillespie to your favorable notice, for perseverance and energy.

I have been brief in this report, as I only arrived in the city this evening; and, of course, cannot be expected to make a full report, or prepare a map; but, if desired, I will make them at a later period.

To fully satisfy the mind of the public, several routes ought to be explored. For instance, one around the head of Lake des Allemands, which would be seven or eight miles longer than the straight line. Another route up the river, to a ridge about twenty miles above the city; and along this ridge to the point on the Bayou des Allemands, where the straight line crosses. This will avoid much of the prairie, but lengthens the road about four miles. And another along the ridge of the Bayou des Familles, the shores of Lake Washa, and along the Barrataria Canal, to the eastern ridge of Lafourche, which would also be longer, but would facilitate more country.

I deem it proper to remark, that as the Convention decided that a rail-road should be built from Algiers to Opelousas, and my instructions were to run a portion of this line, I have not referred to a plan of a road to end on the river above New-Orleans, or to cross over to meet the Jackson Rail-road, but would merely suggest that the expense and delay of such a road would be greater than by a direct route to Algiers. The Mississippi is too uncertain in its action on its banks, and its rise and fall too great, to permit us to think of any construction to pass a rail-road across it, or re-ship freight short of New-Orleans. Travelers from or to the West, would also prefer to make but one crossing, or change of conveyance. The road must be looked at on a grand scale as the great route to the "Great West;" and, if possible, must be kept in that direction, leaving the neighborhoods to join it by plank roads, or branch rail-roads.

For this occasion, I beg leave merely to state that, in my opinion, (founded upon personal examination, and from information derived from every source: planters, hunters, fishermen, travelers, and which all verify my own observation,) a rail-road, elevated above crevasse water, can be built from Algiers to Thibodeauxville, in nearly a direct line, for about $15,000 a mile; or, in round numbers, for the whole distance of fifty-one miles, for $800,000; and I congratulate you, sir, on the favorable result of this important survey.

Your obedient servant,

A. G. Blanchard,

Chief of Survey.

NEW-ORLEANS AND OPELOUSAS RAIL-ROAD.

At a meeting of the Executive Committee of the above road, held at the office, No. 22 Exchange Place, on Monday evening, December 22, 1851, Col. R. H. Payne submitted a copy of his address to Governor Bell, and the Legislature of Texas, containing the substance of two speeches delivered by him in the hall of their House of Representatives, and reported that he had received from the authorities and citizens of Texas the utmost attention and courtesy.

Whereupon it was, on motion,

Resolved, 1. That the grateful acknowledgments of this Committee, on their own behalf and that of the Convention they represent, be, and they are accordingly hereby tendered to his Excellency the Governor of the State of Texas, and to the Legislature thereof, for the kind and courteous reception which they have been pleased to extend to our delegate, Mr. Payne.

Resolved, 2. That the thanks of this Committee be returned to Mr. Payne, for the able and efficient manner in which he has discharged the arduous duties of the important mission entrusted to him by us, and that the views he has taken of the nature of the task assigned to him by this Committee, and the measures he has adopted to carry out those views, meet our cordial concurrence and approval.

Resolved, 3. That a copy of the foregoing resolutions be forwarded to the Governor and Legislature of Texas.

Resolved, 4. That these resolutions, and the address of Mr. Payne, be published in the newspapers of this city.

M. M. COHEN, *Chairman.*

B. F. FLANDERS, *Secretary.*

The following is the address of Mr. Payne:—

To His Excellency P. H. Bell, Governor of Texas:

SIR:—The objects of my mission to the state of Texas, are clearly stated in the documents I had the honor of laying before you, to be: 1. The extension of the New-Orleans, Algiers and Opelousas Rail-Road across the state of Texas, from the Louisiana boundary on the east, to the Rio Grande, at or near El Paso, on the west. 2. To lay the views entertained in Louisiana on this measure before the Legislature of Texas, and to solicit her co-operation, if agreeable, in the extension of said work. 3. And to ascertain what aid, if any, Texas may contribute, either in money or lands, or both, towards the construction of such road across her territory, as the grand national highway from the Atlantic States to the Pacific Ocean. 4. And in the event of the action of Texas through her Legislature being favorable, to ask such further concurrence jointly with Louisiana, as may seem best, to call the attention of the Congress of the United States to the importance of completing the remaining portion of the road, from El Paso to the Pacific Ocean.

As the humble instrument selected to lay these important matters before the state of Texas, I respectfully solicit your attention to the following facts, statistics and arguments, and invoke such consideration of them as the wisdom of the state may award to their merits, or the interest of Texas in the premises may require. They are the suggestions of your brethren of the sister state of Louisiana, and are offered with the most kindly feelings of fraternal regard, as calculated in their humble estimation to advance the mutual prosperity of both, and to unite more intimately and closely the citizens of Texas and Louisiana, by ties of one common interest, one common brotherhood, alike beneficial to all.

In the discharge of the trust thus confided to me, I feel deeply my want of abilities to execute its delicate and responsible duties as they should be in a matter of such vast importance to the welfare of both Texas and Louisiana. As the humble agent from Louisiana, I have therefore to invoke the kind forbearance of Texas in the performance of the duty assigned me, and to ask that the mantle of a brother's love may cover the mistakes and errors I may commit. Let not so noble an enterprise as this, fail of proper appreciation of its great importance to the mutual interests of the citizens of two such great states, for lack of ability or tact on my part to present it as its merits may demand.

The first question, to which I now respectfully invite your attention, is the benefits the proposed extension of the New-Orleans, Algiers and Opelousas Rail-Road through your state, will confer upon Texas. This extension, commencing on the Sabine River, at some point to be designated by Texas, between thirty and a half and thirty-two and a half deg. north latitude, will pass through the state at or near El Paso. A glance at the map will show that it will develop the state nearly centrally from east to west. The distance, according to Creuzbauer's map of 1849, will be about 840 miles; by the way the road may run, it may be a few miles more, say 900 miles. That it will develop more largely the immense resources of the state than any other single line, is most evident. It will facilitate and cheapen to the gulf ports of Texas intercommunication with the whole state. For, after this road is once completed, Galveston, by a single short line tapping it, will be placed in full communication with the whole broad surface of the state, as well as with New-Orleans and all the com-

merce of the West now concentrated upon that city. Equally facile will be the communication from any other part of Texas, by the construction of other branches tapping this main trunk. On the other hand, branches extending through the sections of your state, between your principal streams, up to their head, and tapping this road on the north side, will place them in connection with all your gulf ports, as well as New-Orleans. Advantages are thus secured to your citizens of the markets of your own seaboard, as well as that of New-Orleans. Bearing this sketch in mind, let us now see what rail-roads have effected in other states, in giving additional value to lands and property, and we shall then be able to form some estimate of the influence they may exert in Texas in adding to its wealth.

In 1834, Massachusetts commenced making railways. In 1840, she had finished and in operation 167 miles, and about 650 in process of construction. On the first day of January, 1840, the returned value of *all* the property of the state, as made at the Auditor's office in Massachusetts, was $299,878,329. On the first of January, 1851, Massachusetts had 1,142 miles of rail-road completed, at a cost of $51,873,895; and the value of her property was returned at $666,252,581; showing an advance in ten years of $367,000,000! more than double what it was in 1840! This *increased value* is nearly equal to fifty-two and a half millions of dollars to every thousand square miles of her territory. The aggregate average value of the property of every citizen of that old state was doubled, and the rate of his taxation reduced more than one-half! For, if fifteen cents in the hundred dollars was sufficient to pay all his taxes on a valuation of $299,000,000, half that rate on a valuation of $666,000,000 must more than do it. The estimated cost of these roads is $45,424 per mile. The net *average* dividend for the last seven years, showing them to be good paying stock, is as follows, viz.:

Year.	No. miles in operation, January 1.	Expended in construction.	Net income.	Average net income on cost.
1845	484	$21,572,220	$1,614,188	7.43 per cent
1846	623	27,031,927	1,945,505	7.20 ..
1847	715	32,796,363	2,505,079	7.14 ..
1848	787	41,332,632	2,666,411	6.44 ..
1849	945	45,125,768	2,850,981	6.32 ..
1850	1079	50,959,452	3,306,713	6.49 ..
1851	1142	51,873,985	3,323,802	6.41 ..

These statements exhibit, first, that the rail-roads have more than doubled the value of the property in the state, and consequently more than doubled the value of the fortune of each citizen on the average. Second, that it has reduced the rate of taxation more than one-half. Third, that the average rate of dividends show the stocks of the roads to be worth par and more, and thereby show another fact, viz; that the roads can be sold now for more money than they cost; and that, if now sold, Massachusetts would have the increased value, amounting to three hundred and sixty-seven millions of dollars, and without its having cost either the state or its citizens a single dollar; and all effected in ten years, by the instrumentality of her rail-roads.

But the history of Massachusetts railways shows another fact of great importance, viz: the value of property in 1849, in the counties through which *no* railway passes, exhibits an increase, compared with the value in 1840, of $156,000,000, as the effect of the *indirect power* of such improvements, to impart value to property beyond the limits of the counties where they run.

In Georgia, lands on the line of the Chattanooga Road, that in 1846 could be bought for ten, twenty, thirty and fifty cents per acre, commanded in 1849, when the road was finished, ten, twelve, fifteen, and as high as twenty dollars per acre! The same road in its extension from Chattanooga down to Nashville, in Tennessee, passing through the counties of Franklin, Bedford, Rutherford and Davidson, show the following as the result of *one year* in adding value to property. The road was chartered and put under contract in 1848. The value of property in these four counties, as appears from the Auditor's books, was as follows:

	On 1st January, 1848.	On 1st Jan. 1849.
Davidson	$13,325,178	$14,194,744
Rutherford	5,770,404	6,151,862
Bedford	3,265,607	3,928,155
Franklin	1,502,854	1,843,921
Total	$23,864,043	$26,418,682

Showing an advance of $2,554.639 in *one year*, and the whole cost of constructing the road, (which was under contract,) was only $1,457,000. Here we have the fact that in one year there was returned, as the effect of the rail-road, the sum of eleven hundred thousand dollars to the pockets of the planters—more than the cost of the road when completed.

But the power of rail-roads to advance the prosperity of a state is not limited to imparting value to lands alone. They possess the power of creating a commerce where they are made. Col. Gadsden, State Superintendent of the Rail-roads of South Carolina, in a letter on the subject, recently published in the Charleston papers, says:—"that the immense increased value imparted to lands is from 500 to 5,000 per cent.;" and that the value of the products transported on a newly finished road, was "the first year not more than twenty

thousand dollars, but which this year (the succeeding) will exceed two hundred and fifty thousand dollars."

The effects of rail-roads in advancing prosperity have been equally happy in New-York, Pennsylvania, Maryland, Virginia and Alabama; and it is fair to presume equally beneficial results will accrue to Texas and Louisiana by their adoption and successful prosecution. We regard this question as settled, by every experiment in Europe and America, that every railway, to produce these beneficial results, must have one of its termini in a commercial mart, where the people seek a market for their surplus products. Rail-roads have failed, and will fail again and again, whenever this principle is disregarded or lost sight of.

Lands along the line of the Mobile and Ohio Rail-road, that could have been obtained for the asking, while the country belonged to France and Spain, and which have been in market for thirty years, by the Congress of the United States without finding a purchaser, has, since the laying out of that road, advanced to three, and even as high as eight dollars per acre.

But not to multiply facts, (which could easily be done,) enough has been advanced to, satisfy any reasonable mind that rail-roads possess the power of advancing our prosperity beyond any other invention human genius has ever devised. Let us apply these facts to Texas and the road in question.

The proposed road from the Sabine to the Rio Grande will be over 800 or 900 miles in length. It will cost about $10,000 per mile. This will make a sum of eight or nine millions of dollars. The country through which the road will pass is one of unsurpassed loveliness, and in fertility of soil and salubrity of climate, equal to that of any state in the Union. Its water power is immense, and so far as is known of it, evidence of mineral wealth of various kinds, marble, coal, &c., are found to exist. The table-lands produce the finest wheat, corn, oats, rye and barley; fruits of all kinds common to the northern and western states, besides productions peculiar to the South, such as cotton, sugar and rice, and tropical fruits; horses, cattle, hogs, sheep and mules, can be raised in numbers almost illimitable, and wants but a system of rail-roads, branching from this main trunk, to afford outlets at all seasons, to be adopted, to bring into the state a tide of immigration from the southern and western states, to make it in population and wealth the first state in the Union. It is known at home and abroad that your rivers cannot be relied on as affording an outlet for your surplus products, and that the middle and northern portion of the state cannot, and will not be settled up to any great extent until such an outlet is afforded, such as this road would furnish. The ruinous expenses now incurred in this, the most beautiful and healthy portion of your state, by your planters, what few there are, in getting to any market, must and will keep away immigrants, and confine the price of lands down to a mere nominal value.

Texas now has it in her power to remedy these evils, by creating a confidence abroad, that this road shall be built. How can she do it, and at the same time pay off her present indebtedness? Answer.—The state owns one hundred and eleven millions of acres of land, and if the legislature would appropriate eight of the ten millions of dollars coming from the United States, confidence would be created that such an outlet would be had for all her surplus productions. That confidence thus created abroad, that such a road will be made, will induce a population to come to the state and purchase lands with unexampled rapidity. Your lands would no longer possess a mere nominal value. This road, passing nine hundred miles across your beautiful domain, would doubtless go through more or less of the public land: and, if it touched in its route but three or five millions of acres, who is there that cannot see, from the examples already cited, that the state would receive for these lands, as soon as the road was located, a sum sufficient to pay all her creditors, and have three millions of dollars left for other purposes of improvement, &c.? She would have the means, besides paying her present creditors, to build roads, tapping this great trunk, from Galveston and every other of her gulf ports; beside tapping it on the north, between the head waters of all her principal streams, giving corresponding value to the public domain, as each separate road should be laid out. That such a system, if adopted, would give an average value of five dollars per acre to her public land, within the time these roads would be under process of construction, cannot be reasonably doubted. The revenue arising from all these roads would be immense, and forever belong to the state. It would be sufficient to free her people in all time to come, not only from taxation, but supply the means to give a classic education to every child born on the bosom of her beautiful domain. But however advantageous such results would be to the state, its advantages in giving value to the property of her present citizens, owning as they do, so large a portion of the fertile lands of Texas, are equally evident.

But it is contended by some, that the ten millions of dollars, coming from the government of the United States, after fourteen years, although not money now, yet being convertible into cash at par, that Texas is bound to apply it in payment now, of her suffering creditors, many of whom are her war-worn soldiers as well as creditors. The reasonableness and justice of this view, Texas will no doubt duly consider. But in considering it, would it not be well to reflect that these war-worn soldiers of hers, whose claims now amount to less than a million of dollars, have but little of this world's goods to render them

comfortable in life beyond the lands they now possess, and that those lands possess but little value at present, compared with that value they would have in three or four years, should the system of internal improvement be begun, with such an appropriation as that alluded to, to inspire confidence in immigrants that the scheme would be successful? In this view of the question, it becomes a matter of great consideration, whether the civil obligations and moral gratitude of the state would not be more fully met by such an appropriation of a part of this fund to rail-roads, than its immediate appropriation to the extinguishment of the claims of all her creditors. If by an application of eight of the ten millions of dollars to this work, an increased value of ten, twelve or fifteen dollars per acre would be added to their lands, as in the case of the Chattanooga lands, before referred to, would not such application be wise, and enable Texas to repay her soldiers and citizens in the most substantial manner the debt of gratitude so nobly won and so nobly recognized? If this road across the state would pass through only three millions of acres of public lands, and gave a value of only one-half of that which has been done by other rail-roads, say of five dollars per acre, we see at once the sum of fifteen millions of dollars realized—almost double the amount of the appropriation. This could be secured in four years time; and would enable the state to pay every creditor she has ten years before the money would be due and payable from the United States. Such an appropriation would still leave two millions of dollars untouched, out of which the home debt of her citizens could be paid, as it is less than a million of dollars, and then leave more than a million on hand beside.

But it may be well to inquire whether this road cannot be as fully carried through by a private corporation, with a liberal donation of lands by the state of Texas, as though it were done by the state itself?

In answering this question affirmatively, it must be remarked, however, that no private company or corporation, however liberal the charter may be, or the grant of land by the state, can ever inspire that confidence in the public mind, that would be secured at once to the state by such an appropriation as the eight millions would afford: and consequently no private company could execute that work near so cheaply, nor derive that benefit from the land granted to aid in its construction, as could the state. Confidence in the action of the state would at once be perfect and unshaken, and command, as it were, the necessary immigration to the state by its lands; while on the other hand, confidence in a company would have to grow up slowly and gradually, and only as the work progressed. In the meantime, the company would have to sell the lands at reduced prices to advance the work.

But in reference to this particular rail-road, this view bears against it with peculiar force, regarded as it must and will be by capitalists as a commercial transaction only. The reasons why this is so, are, that this proposed road is designed to cross the state from the Sabine to the Rio Grande, as the great national highway from the Atlantic states to the Pacific Ocean, and for which there are other states now competing for it with great power. The most northern of these routes (Mr. Whitney's,) was regarded with so much favor, that the Senate of the United States passed the bill desired by that gentleman, appropriating a belt of land sixty miles wide, of which the road was to be the centre. This bill was sent to the House of Representatives, and left with its unfinished business. What its fate might have been, had it been reached, no one knows. A convention assembled in Memphis in 1846, which recommended that place as the starting point to the Pacific from the Mississippi River. To aid in its construction, Mr. Calhoun recommended in the Senate, an appropriation of a belt of forty miles of land, the road to be in the centre. Mr. Benton, of Missouri, recommended the St. Louis route, with a like appropriation of land. But besides these competitors and vast landed appropriations, the legislature of Texas, by resolutions passed in March, 1848, granted to the Congress of the United States, alternate sections in a belt of twenty miles, if the government would construct the road to the Pacific across her territory. The grant expired by its own limitation, in March last, Congress having declined its acceptance by its non-action. These various and separate movements have produced the conviction in the public mind, that if ever this road is made from a grant of land, that grant must be more liberal than any heretofore granted. The grant to the United States in 1848, by Texas, was more liberal than a grant of double that quantity now; from the fact, that the most valuable public lands have since been taken up by private claims; and what now remains are so much further from any point where immigrants would locate for years to come. Nevertheless, it is still not doubted, that the road can be constructed on a grant of land commensurate with so vast an enterprise. Whatever that grant may be, if sufficient to secure the completion of the road, aided by private capital, the road, when finished, would return more than a thousand fold value back to Texas and her citizens. The outlet and market it would afford for muskeet and other hay, from her almost boundless prairies, and now valueless to her, (without referring to any other articles of trade,) would each year more than repay a grant of thirty millions of the one hundred and eleven millions of acres of land she now owns. But this road is eminently needed now, to open the centre and northern portion of the state, to say nothing of the advantages it would eminently confer on its southern side, to the gulf. This road would direct a healthful tide of immigration from the southern and western states, such as would soon place Texas in the front rank of states, in wealth and population. Her

soil and climate can support the densest population of any state in the confederacy. But to secure the construction of the road, as before said, a most liberal grant of land is absolutely requisite, if the work is ever consummated by such means. The wisdom of the legislature must decide these questions as the best interests of Texas demand. To that decision your brethren of Louisiana, and of the whole south, look with unshaken confidence, that it will be all that the patriot can desire.

The foregoing considerations address themselves to the interest of Texas and her citizens as a state. The cases of Massachusetts, Georgia, &c., show, conclusively, that such a road, traversing your state from its eastern to its western boundary, would immediately, on its location, add more than a hundred millions of dollars to the value of your lands; and that when completed, it would pour untold millions of wealth into the laps of your people and state.

But the *national* character of the road, and the changes it is destined to work, remain to be considered. When contemplated in this light, it exhibits a commercial power, the moral and political grandeur of which sink all other human enterprises into nothing.

Let us look at the history of the last fifty years, and see what has been accomplished by the United States; and by the lights of the past half century, obtain such aid as may direct our minds as to what the next fifty years may unfold.

The close of the last century found us engaged in a maritime war with France. The beginning of the present, opened with a war, by sea and land, with the Barbary powers, Tunis, Algiers, and Tripoli, closed by the peace of 1804. Louisiana and Florida on the east of the Mississippi River, and all west of that stream, belonged to Spain. By the treaty of San Ildefonso of April, 1803, France acquired Louisiana, and west of the Mississippi from Spain, and which was sold by her in June afterward to the United States. Florida was subsequently acquired by the treaty of Washington, from Spain, in 1819. The beginning of this century found us with a population, inclusive of slaves, of about five millions of inhabitants. Our commerce small, and suffering from the piracies of the Barbary states, and the aggressions of other powers—Europe in arms by sea and land, caused by the French revolution—Napoleon at the head of the French, engaged in war with England and other continental powers. England supreme on the ocean—Napoleon supreme on land. To crush the manufacturing and commercial power of England, Napoleon issued, in November, 1806, his Berlin decree, followed by his Milan decree, of October, 1807, and the two, constituting the celebrated Berlin and Milan decrees, followed by the British orders in Council of 1808, and all these, bearing disastrously upon the commerce of all nations, and particularly so on ours, which brought about our embargo act; England all the while impressing our seamen from our merchantmen, and which led to the declaration of war by Congress in 1812—exhibiting the fact, at that moment, of the whole civilized world being at war at one and the same time. Peace was ushered in by the close of 1815. But in the meantime, the United States had engaged in another war with the Barbary powers; Indian difficulties continued to exist more or less at home. Texas was annexed, followed by a war with Mexico, in 1846, and terminated by the treaty of Guadaloupe Hidalgo, 1848, by which our possessions on the Pacific were greatly extended.

Such is a brief summary of the difficulties we had to encounter and overcome the past fifty years, and whose history has been invoked to aid us in forming an opinion of what the next years may bring forth. At the beginning of it we had a population of about five millions, with a commerce proportionably small. Great Britain had then more commerce and more commercial tonnage than all the rest of the world combined. Compared with it, our commerce was a cipher. But at the end of fifty years our population has advanced from five to twenty-five millions; and on the first day of January, 1850, our commercial tonnage had reached 3,681,469 tons, while that of Great Britain, on the same day, was only 3,130,000 tons! showing an excess in favor of the United States over Great Britain of five hundred and fifty thousand tons. And yet Great Britain has now more commercial tonnage than all the rest of the world, leaving out the United States. With these facts before us, the question comes up—the next fifty years to us will produce what? If the territorial limits of the United States receive no further aggrandizement, our population will have advanced, according to our present increasing rate, to one hundred and fifty-four millions of people. Our commerce, now at the head of the world, will be—no matter what, but still at the head of the world, controlling every ocean, sea and river. The centre or heart of the commerce of the world has been the last several centuries, and now is, London. The next fifty years will see it transferred to the United States. Such must be its inevitable destiny! A question now arises of vast concernment—Where, on this Continent, shall that centre be located? The moment this question is propounded, we venture to assert, that there is not an intelligent mind in this vast confederacy but instantly responds, it must be either New-Orleans or New-York. The one or the other is destined to be the commercial mistress of the world! Which shall it be? This question, for aught we see to the contrary, may now be in the power of the present legislature of Texas to solve and decide. Could I but lift the veil that now enwraps the future of these fifty years, and show what that decision has made or marred, I should feel that I had discharged the highest duty a southerner owes to the South. Citizens of Louisiana await in trembling anxiety, but with confidence, this decision. They tremble, not from fear, but at the immensity of

the stake involved in the decision Texas is about to make. You have the glorious one-starred banner, yet bright and undimmed, to guide your decision. Louisiana has the pelican standard, from which to feed the nations of the earth with the commerce of the world! That future centre of the commerce of the world must be a northern or a southern city—New-York or New-Orleans. The contest is noble—the prize, mistress of the commercial world! Louisiana does not doubt, in this contest, where Texas will be. And one of her humblest children says to Texas, "Courage—the South must win the prize." The interest of Louisiana bids me say, that nature seems to have intended that destiny for New-Orleans. Situated, as she is, on the mightiest river of the globe—that river penetrating the largest and the richest valley on earth, four thousand four hundred and ninety-one miles, with more than a thousand rivers for its tributaries—comprising, between the crest of the Alleghanies on the east, and the crest of the Rocky Mountains on the west, and our boundary on the north, an area of 1,921,146 square miles. That a single voyage performed from New-Orleans to the head of navigation of each river, tributary, lake, or estuary, and back, will show an inland navigation of one hundred and two thousand miles, as the development of the mighty Mississippi alone. To this add Texas, and our Pacific possessions, which this great road is designed to develop, and we have a territorial concentration upon New-Orleans of 2,989,274 square miles—more than a third larger than all Europe. Great as this is, yet when we look at the map of the world, this natural destiny of New-Orleans appears more distinctly marked. She is on the direct route from Europe, across the American continent to the Pacific Ocean and its islands—the East Indies and China. This road, once completed to the Pacific from New-Orleans, and the commerce of the Northern Atlantic states, Europe, East Indies and China, will all meet there, and Texas will be within two hours' ride of the commercial capital of the world. The South will cease to be traders to the north, but the North will be traders to the South. We shall then no longer be disturbed by northern fanaticism or aggression.

But in the midst of all this, where is the Republic of Mexico, Central America, Peru and Chili? Their commerce, their trade, will but go to swell the great aggregate of that which goes to increase the future ascendency of the South in controlling the fortunes and destiny of this great confederacy for all future time.

So long as Virginia was in the ascendency, and held the proponderance in our national councils, the distinctive marks which she impressed upon the public policy of the general government were, "protection to all rights; aggression upon none." Since Virginia has lost that ascendency, aggression and intermeddling with constitutional rights have been the order of the day, and have driven some states almost to madness and rebellion, while justice has been denied to private citizens. At all events, southern policy, as exhibited in the good old days of Virginia ascendency, has proved its capability of administering the general government satisfactorily to all, and aggression on none. Texas must take her place. She has territory, soil and climate, to make her the future vast empire state of the whole confederacy. Her wisdom and power to wield the destiny of this republic, then, as did Virginia of old, none will doubt. Her motto, doubtless, will still be, "PROTECT ALL RIGHTS; AGGRESS UPON NONE."

As a state, Texas will be benefited more than any other state by this road, although Louisiana will possess the commercial capital. It will make her and her beauteous domain the garden of the world; and, as before said, within ten hours' ride of New-Orleans, where she will meet the commerce of the great West, as well as that of Europe, &c.

But will the commerce of Europe and the Northern Atlantic states take this route to China, East Indies, &c.? We think so. The voyage out and back takes about fourteen months on the average. The saving of time—the saving of interest on investment—the saving of insurance on hull and cargo of vessels bound out, having to double Cape Horn or the Cape of Good Hope, we think will sustain us in this assertion. The insurance on hull and cargo is equal to about twelve dollars per ton. A vessel leaving Europe can deliver her cargo in New-Orleans in thirty days. It can be transported to the Pacific in five days, and in as many more days it can be delivered in China. It can return to Europe in as little time. This will make the voyage out and back five months, instead of fourteen; a saving of nine months' interest of capital—a saving of nine months' expenses of ship, captain and crew. Now, if the road should charge, per ton, for transport to the Pacific, only twelve dollars, the same that is now charged simply for insurance, would it not bring this trade along this route, seeing the advantages of the other savings of time, interest, and expenses of ship, captain and crew? It certainly would. But how much business would this give the road? In answer we say, there left during the year 1849 from the ports of the United States, Great Britain, France and Holland, 4,608 ships, of an aggregate tonnage of 1,805,688 tons, which, at the rate of $12 per ton, would give the sum of $21,668,256, and the return trip would make it as much more.

The business of our own territory would be immense, and the travel of the world would be through Texas. But we must not expect New-York will be idle, nor yield without the most vigorous struggle, the commercial supremacy to the South. She will be backed by Philadelphia, Boston and Baltimore. The whole capital of the North will be engaged in her behalf. All its talent, energy and untiring industry, will be exerted to secure this prize, as all others have been, to the North. Who will stand by New-Orleans in this contest? Will the South stand by her in this struggle? or shall we yield this, as we have all

other advantages, to the North? The decision of Texas now may seal the fate of this question forever.

Having now presented this question before you to the best of my feeble abilities, both as to the interest of Texas as a state, and its national aspect as affecting all the southern and western states, I beg leave to close by saying, that the magnitude and importance of the subjects discussed must be my best apology for the length of this communication.

I have the honor to be, sir,
Very respectfully, your ob't servant,
BUCKNER H. PAYNE,
Agent Louisiana Railroad.

City of Austin, Nov. 10, 1951.

DEPARTMENT OF COMMERCE.

1.—FOREIGN IMPORTS AT ST. LOUIS.

Statement of foreign merchandise imported, and duties paid, at St. Louis, during the year ending 31st of December, 1851, *made from the Report of W. W. Greene, Surveyor of the Port of St. Louis.*

[From the Western Journal, St. Louis.

FOREIGN merchandise imported into St. Louis in the year 1851, and entered here, the foreign value of which amounts to	$757,509 00
Foreign merchandise entered at other ports in 1851, and now in transportation, under bond for the payment of duties at St. Louis, the entries being received, the foreign value of which is	107,902 00
Amount of duties on foreign merchandise collected in 1851	239,318 68
Amount of duties unpaid for merchandise in store 31st December, 1851	8,261 89
Amount of duties unpaid on merchandise in transit from other ports, destined to this port	32,679 20
Amount of duties paid and accruing on merchandise imported for this port in 1851	280,259 77
Of the above, exclusive of the said merchandise in transit, there was imported from England mdse. the foreign value of which was	406,113 00
From France	38,404 00
Germany and Holland	23,239 00
Spain and dependencies	220,770 00
Brazil	68,983 00
Total foreign value	$757,509 00

The general description of merchandise imported, entered for consumption and warehoused in the year, and foreign value thereof, is as follows, viz.:

Sugar and molasses	$289,753 00
Hardware, &c	133,401 00
Rail-road iron	100,211 00
Earthenware	93,786 00
Tin plates, tin, iron, copper, &c	81,482 00
Brandy, wines, gin, cordials, &c	24,712 00
Dry goods and fancy goods	24,287 00
Burr stones	2,259 00
Drugs and medicines	2,618 00
Total	$757,509 00

Hospital money collected at this port in 1851	$2,941 00
Hospital money expended at this port in 1851, for relief of sick and disabled boatmen	$3,441 44

2.—STEAM-BOAT ARRIVALS AT ST. LOUIS,

From New-Orleans, the Ohio River, Illinois River, Upper Mississippi, Missouri River, Cairo, and other points, during the past five years, viz.: 1847, '48, '49, *and* 1851.

	New-Orleans.			Ohio River.			Illinois River.			Up'r Miss'ippi.		
MONTHS.	1847.	'49.	'51.	'47.	'49.	'51.	'47.	'49.	'51.	'47.	'49.	'51.
January	22..	13..	20..	8..	5..	13..	9..	14..	23..	4..	2..	10
February	15..	32..	22..	16..	18..	22..	8..	19..	36..	8..	4..	12
March	48..	38..	29..	28..	58..	45	85..	82..	78..	41..	79..	65
April	77..	36..	31..	41..	65..	64	91..	63..	63..	74..	117..	65
May	93..	22..	40..	61..	38..	59	106..	42..	78..	128..	73..	97
June	49..	19..	25..	37..	38..	34..	60..	56..	37..	91..	77..	56
July	67..	21..	13..	41..	13..	28..	58..	33..	30..	81..	53..	48
August	24..	17..	23..	37..	16..	45..	41..	62..	61..	51..	67..	61
September	28..	31..	22..	30..	33..	34..	45..	87..	54..	57..	77..	63
October	22..	26..	27..	67..	40..	37..	57..	70..	52..	80..	87..	56
November	32..	27..	29..	42..	43..	47..	60..	93..	83..	69..	100..	77
December	23..	31..	19..	22..	39..	31..	38..	65..	39..	33..	61..	29
Total	502..	313..	300..	430..	406..	457..	658..	686..	634..	717..	806..	639

	Missouri River.			Cairo.			Other Points.		
MONTHS.	1847.	'49.	'51.	'47.	'49.	'51.	'47.	'49.	'51.
January	—....	—....	—....	11....	7....	7....	5....	12....	18
February	1....	3....	—....	10....	5....	5....	6....	17....	12
March	14....	44....	32....	3....	10....	2....	13....	27....	33
April	32....	63....	28....	1....	9....	6....	12....	21....	19
May	63....	50....	46....	19....	14....	17....	20....	18....	26
June	48....	43....	48....	8....	11....	5....	13....	22....	8
July	45....	19....	22....	19....	6....	9....	19....	10....	6
August	32....	28....	35....	10....	8....	11....	24....	14....	21
September	23....	41....	34....	18....	11....	20....	28....	19....	13
October	31....	34....	35....	18....	12....	15....	34....	18....	7
November	16....	21....	25....	13....	14....	13....	18....	15....	7
December	9....	9....	5....	16....	15....	9....	12....	24....	5
Total	314....	355....	301....	146....	122....	119....	204....	217....	175

3.—STEAM-BOATS AT ST. LOUIS,

Showing the monthly arrivals of Steam-boats and Barges, Keel and Flat-Boats, with their respective Tonnage, Wharfage, Harbor-Master's Fees, &c., for the years 1850 *and* 1851.

	Arrivals of steam-boats and barges.		Arrivals of keel and flat-boats.		Tonnage of steam-boats and barges.	
MONTHS.	1850.	1851.	1850.	1851.	1850.	1851.
January	64	112	3	2	14129	23942
February	173	154	9	1	37241	29013
March	400	354	29	4	81969	71819
April	349	315	15	5	79505	73069
May	312	414	16	13	71825	98371
June	334	210	20	2	72984	57938
July	218	162	3	0	43196	40273
August	276	269	0	1	51789	62842
September	259	258	3	7	54610	59066
October	274	244	1	1	58268	57729
November	412	347	13	7	82980	73441
December	168	164	3	0	34756	35637
Total	2339	3003	115	43	681256	683140

Steam-boats at St. Louis continued.

MONTHS.	Wharfage. 1850.	Wharfage. 1851.	Harbor-Master's Fees. 1850.	Harbor-Master's Fees. 1851.	Paid into City Treasury. 1850.	Paid into City Treasury. 1851.
January	683 80	1777 52	54 70	106 65	629 10	1670 87
February	1825 50	2002 17	146 04	120 13	1679 46	1882 04
March	4091 90	5630 49	327 35	337 83	3764 55	5292 66
April	3865 75	5048 94	309 26	302 94	3556 49	4746 00
May	3566 15	6974 42	285 29	418 46	3280 86	6555 96
June	4048 92	3066 85	232 01	184 01	3839 71	2882 84
July	3137 10	2493 91	188 22	149 63	2948 88	2344 28
August	3518 87	4819 99	211 13	288 60	3907 74	4520 39
September	3870 48	4132 72	232 23	247 96	3638 25	3884 76
October	4267 15	4132 49	250 03	249 95	3917 12	3884 54
November	5718 46	5159 09	343 11	309 54	5375 35	4849 55
December	2601 00	2927 45	156 06	175 65	2444 94	2752 80
Total	$41195 08	$48156 04	$2735 43	$2892 35	$38382 44	$45266 69

4.—PORT OF PHILADELPHIA,

The following statement shows the value of the imports annually into the port of Philadelphia, and the duties accruing to the United States, from 1830 to 1851, inclusive. They have been carefully prepared from official documents:

Years.	Value of Imports.	Duties.	Years.	Value of Imports.	Duties.
1830	$9,525,893	$3,537,516 10	1841	$9,948,598	$1,983,681 64
1831	11,673,755	4,372,525 98	1842	6,201,177	1,812,842 82
1832	10,048,195	3,500,292 50	1843	4,916,535	1,437,837 84
1833	11,153,757	2,985,095 50	1844	8,410,864	2,981,573 15
1834	10,686,078	2,110,477 32	1845	7,491,497	2,370,515 71
1835	11,868,529	2,501,621 43	1846	8,308,615	2,608,068 16
1836	16,116,625	3,146,458 43	1847	12,153,937	2,904,748 97
1837	10,130,838	1,820,993 21	1848	10,700,865	2,767,459 13
1838	10,417,815	2,109,955 30	1849	10,160,479	2,694,245 34
1839	14,753,589	2,884,984 16	1850	13,381,759	3,412,239 68
1840	8,624,484	1,517,206 70	1851	12,795,440	3,673,123 80

5.—STEAM-BOAT DISASTERS ON THE WESTERN WATERS,

During the year 1850, *as published in the Insurance Reporter:*

Total number of boats	119
" " of lives lost	320

On the western waters during the year 1851.

From sinking, striking snags, and other obstructions of the river	52
From collapsing of flues	8
" explosion	16
" collisions	8
" fire	13
" various causes	12
Total number of boats	109

Lives lost, as near as ascertained, during the same period.

From collisions of boats	86
" explosion and sinking	407
" fire	161
Total number of lives lost	454

Comparative loss of lives during the years 1850 *and* 1851

	1850.	1851.	Excess.
Collision of boats	8	86	78
Explosions and collapsings of flues	161	407	247
Fire and sinking	156	161	5
Excess of lives lost in 1851			330

DEPARTMENT OF AGRICULTURE.

1.—THE CULTIVATION AND PREPARATION OF COTTON, INCLUDING PICKING AND PACKING.

LAND intended to be planted in cotton should be bedded up as early in the winter as possible, to allow the freezes to pulverize the soil thoroughly and the land to settle immediately under the tap root. The plowing should be done with the best turning plows, as deeply as the nature and depth of the soil will admit, and in the most thorough manner. Especial care should be taken to leave no land unbroken between the furrows. If the soil is stiff and deep, two horse plowing, to a depth commensurate with that of the soil and ease to the team, is infinitely preferable; this secures a more thorough drainage and greater and freer penetration of the roots of the plant to the most sub-soil, in either wet or dry summers. The rows should be laid off with a scooter plow, at distances suitable to the strength of the soil, say five and a half feet to six feet on bottom land, and four to five feet on upland, or even less than four, if the soil is thin. Stubble land to go in cotton, (which should always follow corn, small grain, or fallow land,) should be broken or bedded up very early in the winter, to allow time for grass seeds and stalks to rot, and the frost to disintegrate furrow slice and clods. A good plan on stubble, corn, or fallow land to go in cotton, is to lay off the rows with a scooter plow; enlarge the furrow with a shovel plow; drag all the grass weeds or stalks into the furrows, and then list two furrows of a wo-horse plow upon the soil of vegetable matter, leaving the bulks to be well plowed out with a turning plow about a fortnight before planting. This puts all trash out of the way in chopping out, and provides an absorbent for moisture and a bulk of manure beneath each bed. If a heavy rain or baking wind should run the land together, and form a crust upon the bed, a one horse harrow run over the bed will pulverize the crust and put the land in good tilth. Cotton should be planted from the fifteenth of March to the 10th of April, as the season or sort of land warrants. Seed should be well saved, and if kept over one year for planting, will ensure a better stand and more vigorous plants, as the imperfect seed perish by keeping over. They should be sown at the rate of one and a half to two bushels to the acre, in direct proportion to the width of the rows (narrow ones requiring more seed) and the stiffness of the soil, the latter case demanding also more seed. Seed on light land may be covered with a board with a notch in it, attached to a scooter stock. But stiff lands should always be covered with a harrow or two small scooter furrows. The ridge, in the latter case, over the seed, to be scraped off with a board with a notch in it, as soon as the seek cracks the ground in germinating. The board is useful in scraping off the first coat of grass; the first plowing of cotton should begin when the third leaf appears on the young plant, and be done with a sweep, Mississippi scraper, or some similar implement, as no roots are lacerated by this process, and the plant suffers no check in growth; chopping should begin in from four to seven days after running round, and to be done with hoes of as nearly equal size as possible, the stand being more uniform in consequence. From one to four stalks should be left in a stand at this time, and the distance between stands governed by the strength of the soil; though thick planting in moderation on all soils—say six feet by eighteen inches on bottom land, and four feet by twelve inches on good upland—will be found the most productive in an average of years. The second ploughing should be done with a sweep next to the bottom, with a mould board next to the plant, to dirt the young cotton, and the balance of the row plowed out with a turning plow to keep up the bed. The stand should then be thinned to one stalk in a place on strong land, but from two to four may be left on being thinned to supply limbs by stalks; all subsequent plowing in ordinary seasons should be done with the sweep, with the mould board to keep up the bed. But in laying by, one or two furrows should be run with a turning plow to drain off the surplus water from heavy rains; bottoms should be plowed every twenty days, and hoed immediately to keep it constantly growing, the

earth light and pervious to the sun, air and dews. In very wet seasons, recourse may be had to turning plows with benefit, provided they do not penetrate deeply near the plant, for this checks the plant if it turns off dry by breaking the roots, and causes it to shed, and forces it too much in growth if rain follows speedily. It is doubtful whether topping cotton is beneficial in the average of years, sometimes doing well, and at others failing in nearly similar circumstances.

Picking should begin as soon as a hand can gather fifty pounds in a day, as the oil is soon evaporated by the sun, wind and rain, and a large per cent. of weight is thereby lost. In full crop years, cotton should be picked as free from leaf as is consistent with good work. But in short crop seasons, too much pains should not be taken with the leaf, as the difference in number of pounds will greatly overbalance that of loss of price per pound, and discrimination does not prevail in the market to any extent comparable with that of the large crop years. Planting seed should be saved from the second picking in general, and from cotton picked from midday till night, or that seemed well for the purpose. All other cotton should never be sunned unless wet by rain, but packed in close bulk from four to eight weeks, to allow it to heat; care being taken not to allow it to heat too much, and the oil from the seed to diffuse through the lint, imparting to it the tinge so admired by buyers and manufacturers. Ginning should be carefully done at a moderate speed. Packing should never be done in very dry or windy weather, but always in damp and moderately rainy days, as it packs better, weighs heavier, from the absorption from the air and retention of the oil latent in the lint. The bagging should always be put on loosely to allow for the swelling of the bale, and completely envelop the cotton. The ropes should be put on tightly, to prevent undue expansion of the bale, and be at least six in number.—*Soil of the South.*

2.—WOOL-GROWING IN TEXAS.

Wool-growing is making considerable progress in Texas. During a late tour we saw many fine flocks of thorough and mixed breeds. They all seemed to be doing well; and, with the same attention which sheep require elsewhere, they will, doubtless, prove highly profitable in Texas. We saw flocks with several hundred sheep in each, of improved stock, and they were all thrifty and promising. The exportation of wool will be looked upon as quite a heavy item in the trade of Texas within a few years, if present appearances are to be trusted. We notice by the papers of Illinois, that sheep have done well on the prairies of that state; and they may do so in Texas, though as yet most of the flocks have been confined to hilly and partially wooded districts.—*Galveston Civilian.*

3.—BEET-ROOT SUGAR vs. CANE SUGAR.

We find the following in the Moniteur Parisien: "Notwithstanding the advantages accorded to colonial sugar, and the duties which weigh on beet-root sugar, the latter article has acquired such a regular extension, that it has reached the quantity of 60,000 tons; that is to say, the half of our consumption. France, deducting the refined sugar exported under favor of the drawback, consumed 120,000 tons; of which 60,000 are home-made, 50,000 colonial, and 10,000 foreign. The two sugars have been placed on the same conditions as to duties; but it is only from the 1st inst. that the beet-root sugar will pay a heavier duty than our colonial sugar. In spite of this difference, we are convinced that the manufacture of beet-root sugar, which is every day improved by new processes, will be always very advantageous, and will attain, in some years, the total quantity of the consumption. In Belgium, the produce of the beet-root follows the same progress. The consumption of sugar there, was in 1850, 14,000 tons; of which 7,000 was beet-root, made in 22 manufactories. This year there are 18 new ones; and although their organization does not allow of their manufacturing in the same proportion as the 22 old ones, they will furnish at least 3,000 tons. The quantity of foreign sugar in that market does not reckon more than 4,000 tons. This conclusion is the more certain, as in 1848–1849, the beet-root only stood at 4,500 tons in the general account. It may be, therefore, seen from these figures what progress has been made. The same progressive movement is going on in Germany.

In 1848, it produced 26,000 tons, and in 1851, 43,000. The following table shows the importance of this improvement. It comprises the Zollverein, Hanover, and the Hanse Towns:

	Cane-Sugar.	Beet-Root.	Totals.
1848	60,500 tons	26,000	86,500
1849	54,000 "	34,000	88,000
1850	48,000 "	40,000	88,000
1851	45,000 "	43,000	88,000

Thus we find that in this period of four years cane-sugar has lost 15,000 tons; and it will lose still more when new manufactories shall have been established. The consumption of Russia is estimated at 85,000 tons; of which 25,000 is beet-root; and what proves that the latter every day gains ground is, that the orders at Havana are constantly decreasing, and prices are getting lower. In 1848, Austria consumed 40,000 tons, of which 8,000 tons were beet-root. Last year she produced 15,000. The productions of the continent rising to 45,000 tons, and the consumption remaining nearly stationary, it is evident that Brazilian and Cuban sugars will encumber the English market, independently of the refined sugar of Java, which Holland sends to Great Britain. When the continental system was established by the decrees of Milan and Berlin, the Emperor Napoleon asked the savans to point out the means of replacing the productions which he proscribed; it is to the active and useful impulse which his genius impressed on all minds, that France and Europe owes this fresh manufacture—a creation the more valuable, as its fortunate developments require the co-operation of chemical science and agricultural improvements."

MISCELLANEOUS DEPARTMENT.

1.—HEMP BUSINESS OF NEW-ORLEANS.

HEMP.—We intimated in our last annual report there was likely to be a material falling off in the supply of hemp, as compared with the year previous, and the result shows the receipts here, since 1st September, to be 25,116 bales, against 34,792 bales last year, or a decrease of 9,676 bales. Respecting the course of trade in the article, we may say, as in the case of lead, that our city has almost ceased to be a market of sale, as there is no foreign demand, and the bulk of the supply is now sent here for transhipment to northern ports. Thus the entire sales of the season have barely reached 1000 bales, at $90 @ $103 per ton for dew rotted, and the total exports are 22,220 bales, of which 12 bales to Bremen is the only one to a foreign port. The following table exhibits the comparative receipts and average prices for a series of years.

	Bales.	Per Ton.
1842—43	14,873	$80 00
1843—44	58,062	66 00
1844—45	46,274	60 00
1845—46	30,980	60 00
1846—47	60,238	90 00
1847—48	21,584	115 00
1848—49	19,856	132 00
1849—50	34,792	109 00
1850—51	25,116	100 00

We have made some inquiries respecting the growing crop, and find that those best informed on the subject expect that the supply will be even less than that of last year.

2.—COFFEE BUSINESS OF NEW-ORLEANS.

COFFEE.—This prominent article among our foreign products has met with extensive demand during the past season, and as importers have generally met the market pretty freely, and speculators have been more guarded in their operations, prices have not taken so wide a range, nor been subject to such sudden and extreme fluctuations, as was the case last year. Still, however, the difference between the highest and the lowest points is very material, amounting to 4¼ cents per lb., the highest being 13 cents in the early part of October, before the arrival of any new crop, and the lowest 8¾ cents about the middle of June. Last year the highest rate was 14¾ cents, in February, and 7¼ in May. The first cargo of the season arrived on the 17th October, and the opening price for any considerable parcel was 12 cents per lb. The following table shows the imports, stocks, &c.

		Bags.
Estimated stock out of grocers' hands on 1st September, 1850, of all kinds,		28,000
Imports direct from Rio de Janeiro,	279,190	
Cuba, Laguayra, &c.	10,367—	289,557
Received coastwise for sale,		36,200
Making a supply of		353,757
Total supply last year		302,840
Increase		50,917

In the direct imports from Rio there is an increase, as compared with last year, of 54,177 bags, while in those from Cuba, &c. there is a decrease of 10,260 bags, and in the receipts coastwise for sale, a decrease of 15,000 bags. The present stock of all kinds, out of grocers' hands, is estimated at 4,000 bags, which would leave 340,757 bags as the quantity taken for the consumption of the West and South, against 269,554 bags last year; or an increase of 80,203 bags. From the interesting circular of H. T. Lonsdale, Esq., coffee broker, we take the following table, which shows the monthly sales and average prices for Rio coffee for the year ending July 1st, 1851, which embraces the coffee season. It will be seen that the average price of the entire year is 10 18-100 cents per lb.

	Bags.	Price.
1850—July	11,833	9.36-100
August	13,867	9.20
September	26,559	10.40
October	3,370	12.15
November	35,094	10.54
December	59,159	10.15
1851—January	67,120	10.78
February	39,246	10.79
March	42,193	10.22
April	39,405	9.87½
May	42,780	9.28
June	14,409	9.10
	395,035	10.18

The total export from Rio de Janeiro during the last crop year, ending on the 30th June, was 1,880,685 bags, of which 852,144 bags were shipped to the United States, against 573,059 bags the year previous. The stock on hand at Rio was estimated at 50,000 bags, chiefly of the low qualities. With respect to the *new crop*, circulars state that it was expected to arrive freely in August, and promised to be of good quality. Its extent is estimated at not *less* than 1,500,000 bags, besides which there are supposed to be 300,000 to 500,000 bags of last year's crop remaining over. This would give a supply for the crop year to end on the 30th June next, of 1,800,000 to 2,000,000 bags. The particulars of the past year's export to the United States are as follows:—to New-Orleans and Mobile. 276,658 bags; Baltimore, 256,062; New-York, 243,215; Philadelphia, 33,688; Boston, 11,218; Charleston and Savannah, 7,015; California, 3,318. Total, 852,144 bags.

3.—PUBLIC DEBT OF THE UNITED STATES.

The Public Debt of the United States and of the several states, is thus given by a late commercial writer, being taken from the returns of 1850:

United States	$61,228,238	Mississippi	$7,271,707
Maine	979,000	Louisiana	16,238,131
Massachusetts	6,091,047	Texas	11,050,201
New-York	23,937,249	Arkansas	3,862,172
New-Jersey	62,596	Tennessee	3,337,856
Pennsylvania	40,424,737	Kentucky	4,531,913
Maryland	15,900,000	Ohio	19,173,223
Virginia	14,400,507	Michigan	2,849,939
North Carolina	977,000	Indiana	6,556,437
South Carolina	3,622,039	Illinois	16,612,795
Georgia	1,903,472	Missouri	956,261
Alabama	10,385,938	Iowa	55,000

Total 1850	$275,480,676
Total 1843	198,818,736
Increase in 7 years	$76,661,940

This shows an increase of about 30 per cent. in seven years, and returns for 1851 will show an addition to the public indebtedness of 1850 of more than forty millions of dollars.

4.—RIVER LANDS IN ARKANSAS—INFORMATION USEFUL TO EMIGRANTS AND OTHERS.

The lands donated to the State of Arkansas by the general government, and known as the "Swamp Land Donation," are just now attracting the attention of the public. When we take into consideration the facts, that they are now being rapidly and permanently reclaimed by a general system of leveeing; that a large proportion of them need no reclamation; that they are the finest and cheapest lands in the Southwest; and are gradually but surely coming into market by the new settlements forming here and there on their borders—it is not to be wondered at, that they should begin to draw a very large share of the public notice.

Four hundred thousand acres of these lands lie in Crittenden county alone, just opposite the county of Shelby. On one side of this immense tract is the Mississippi, on the other the St. Francis river, both navigable at all seasons. Through the centre runs (or will soon run) a plank-road, already partly constructed, and the whole line under contract. And, judging from the indications not only in that state, but here in this city, we may now expect that it will be but a few years before a rail-road will be running alongside the plank-road, all the way to Little Rock. One half of these 400,000 acres never did overflow, and the levees now being constructed will secure all the rest from the highest floods of the Father of Waters.

Mississippi county, just above Crittenden on the river, also contains a very large amount of the lands of this donation—estimated at 450,000 acres. These, we are informed, are mostly choice lands, are as yet wholly unappropriated, and above any overflow without a levee.

Green, Poinsett, St. Francis, Jackson, Monroe, Phillips, De Shu, Chicot, Arkansas, Jefferson, Ashley, Drew, and a portion of many others of the best counties in the state, are subject to the Swamp Land Donation.

In all, the grant is believed to comprise about ten millions of acres, all of which will be exempt from tax ten years in any event; but if not reclaimed within ten years, without tax until reclaimed. Greater inducements were never before offered to settlers, nor to those who wish to make investments in scrip. There is little doubt that these lands can be purchased from the Levee Contractors (who are paid in scrip) much lower than land can be obtained even in Texas. They seem determined to make the levee, and of course, will sell large amounts of scrip to carry on their contracts to successful completion. In Crittenden county alone, there are now 600 hands at work, and in thirty days the principal outlets, through which the overflows have penetrated, will be stopped, thus saving the lands in that county from inundation during the coming spring, and from that time forth. It should, however, be distinctly borne in mind, that there are vast bodies and ridges of these lands which are of the class commonly called *second bottom*, and known to be the best and most durable cotton and corn lands in the South.

EDITORIAL AND LITERARY DEPARTMENT.

1.—ENGINEERING DEPARTMENT OF LOUISIANA.

We are obliged to our friend A. D. Wooldridge, Esq., State Engineer, for a copy of his very valuable Report for 1852; and we were preparing to give it an elaborate analysis, when there appeared in the Picayune one so full and minute, that we determined at once upon its insertion in preference to anything of our own. The closing pages of the report, in which Mr. W. very ably states his positions upon the Levee and Outlet System, we shall endeavor to transfer hereafter entire to our pages.

In the first district, which is composed of the Florida parishes, all the obstructions to the navigation of the Amite, except such as arise from the natural obstacles in the upper portion of the stream, have been removed, and now steamboat navigation may be prosecuted in ordinary states of weather as far as the mouth of the Comite, and in high water to Dennis's mills. The pressing work on Falia and Tchefuncta Bayous has been completed. All the obstructions of Holmes's Bayou, which forms the navigable connection of East and West Pearl rivers, and is the main outlet, have been removed, as well as all obstructions in West Pearl River, as far up as the present wants of the country require.

The plan of opening West Pearl River for steamboat navigation, so as to communicate directly with New-Orleans, is popular in that country, as shorter and more straight. Mr. Wooldridge thinks it feasible, and suggests that Mississippi might be willing to aid in the construction of a work of so much consequence to her. If she should not, the alluvial lands of Pearl River, which will fall to this state under the swamp act, are suggested as a fund which would contribute largely for that object.

The work of cleaning out Bayou Manchac has been completed, so that no bayou in the state is in better navigable order; and work has been done on the Tanchipao and the Bayou Betico.

The Second Improvement District is composed of the country lying between the Mississippi and Ouachita rivers, inclusive of the tributaries of the Ouachita. In this district, Bayou Bartholomew has been cleared out and made navigable as far as Point Pleasant, and considerable work performed still further up. Several cut-offs have been made; one at the "Big Round Turn," by an excavation ninety yards long, shortens the navigation many miles. The force was put on the Lafourche levee, which was fully repaired, but the engineer makes complaint of the want of a law compelling the parishes to keep their levees in order after they are put up firmly by the state. This levee has been several times in danger, because unprotected on the spot. It would often cost the state five times as much to transfer their force to the place as it would to make the repairs. The state levee on Bayou Marine, in Pointe Coupee, was destroyed in that manner.

The Bayou Macon has been thoroughly cleared out for 130 miles, and to within six miles of the Arkansas line.

Bœuf River has been so well improved, that it is susceptible of navigation by good sized boats at high water, and small boats at all stages.

Big Creek, one of the tributaries of Bœuf River, has been examined, and found capable of improvement for twenty-five or thirty miles, and the work is recommended.

In compliance with a resolution of the last legislature, the state engineer has made a survey of all the shoals in the Ouachita River, from Harrisonburg to Ouachita City, with a view of determining the expediency and the cost of removing them, so as to have navigation at low water. Upon an accurate examination, under the most favorable circumstances, Mr. Wooldridge reports that a large class of the shoals is of such a character that they cannot be removed without enormous expense, and would immediately be renewed again from the same causes. He reports, therefore, unfavorably upon this plan of improving the river. In an ordinary stage of water it is as little impeded as any river in the state, but requires some work to clear out obstructions. He suggests that a careful examination might show that a few locks beginning below Harrisonburg might secure enough water for low navigation.

A resolution of the last legislature required a survey of the three routes to Harrisonburg from the Mississippi River, and report upon their comparative advantages, and the expense of keeping them passable during the high stages of the Mississippi. He reports in favor of that which terminates at Waterproof, called the upper route. The other would be best to Trinity, and he estimates the cost at $50,090. In connection with this subject the report makes some remarks on the subject of roads in general, concluding that the state ought to have one thoroughfare to the western high lands, and concentrate all its present force upon that

and gives a decided opinion in favor of what is called the Red River route, as far as practicable.

Nothing has been done on the Monroe and Mississippi road for want of force and appropriations.

The Third Improvement District of the state comprises Red River, Sabine River, Calcasieu River, and their tributaries. The results of the work in this district are less satisfactory than in any other. The only actual work reported, is the deadening of the timber on the Red River, from seven miles below Shreveport to the mouth of the Cushatta Chute, a distance of one hundred and forty miles; the clearing out of Loggy Bayou, the connection between Lake Bisteneau and Red River, the opening of Tones's Bayou about thirty miles below Shreveport, as the upper navigable connection between Bayou Pierre and Red River, and the improvement of Bayou Winsey, so that vessels ascending the Red River may pass into Bayou Winsey up by Bayou Pierre and the lakes, and come out again by Tones's Bayou.

A large part of the report is here devoted to an account of an examination of the Red River from Shreveport to the Arkansas line, under an instruction of the late legislature. We cannot give an idea by an abstract of the details. After arguing that it is the duty of the general government to lend strong aid for the general clearing of the river, he recommends, in view of all the circumstances of the case, that the state should immediately provide for the removing the obstruction of the falls at Alexandria, and the thorough improvement of the river up to Shreveport.

The Fourth Internal Improvement District includes all that portion of the state west of the Mississippi and south of Red River, except the Sabine and Calcasieu rivers and their branches.

In this district the engineer reports works on Terrebonne, from its mouth to Cane Bayou, and on Bayou Black up to the point where Cane Bayou connects with Terrebonne. Grand and Petit Caillou have been cleared out.

The force of the Third and Fourth Districts was occupied six months in repairing the breach of Grand Levee, in Pointe Coupee.

A levee has been built to close Mill Bayou, in the parish of Avoyelles. The raft has been removed from the lower mouth of Fausse Riviere, and no more work is needed in that river. Fifteen men were engaged twelve months in building a road in St. James's parish, from the Mississippi River to the Vacherie Ridge. It was completed in December. A levee has been laid off across Bonnet Carré point, in the parish of St. John the Baptist.

A contract has been made for the completion of the Lafourche and Barrataria Canal by the state, for $55,000, to be completed on the 1st of January, 1855.

The obstructions in Bayou L'Embarras and its outlets have been removed; all the obstructions in Vermilion Bayou, from the bay up to Perry's Bridge, about fifty miles. This makes it easily navigable in high water.

The raft has been removed in Grand River, but has since accumulated again to a considerable extent.

2.—SOUTHERN INDUSTRIAL CONVENTION, ETC.

The Alabama papers have been discussing a proposition made by Dr. Plough, of Louisiana, to establish a Great Agricultural and Mechanics' Exhibition and Fair of all Human Industry, to take place in May, 1853, in the city of New-Orleans, to be followed by annual fairs in the cities of Mobile, Natchez, and such other points as may favor such an enterprise. We think the proposition a good one, and should be delighted to see it carried out. Indeed, for several years we have been proposing something of the kind through our Review; and but lately, when the Southwestern Rail-Road Convention met in New-Orleans, we took occasion to announce a plan of such conventions and fairs, which will be made public as soon as the papers of the Convention are printed. Meantime we give the particulars of a meeting which has been held in Montgomery, on the subject:

According to previous notice, a highly intelligent and respectable meeting of ladies and gentlemen was held in the State House, for the purpose of co-operating with Louisiana and other southern states in an effort to establish a Great Agricultural and Mechanics' Exhibition in May, 1853, in the city of New-Orleans.

Hon. Price Williams, of Mobile, was called to the Chair, and James B. Gladney, of Pickens, appointed Secretary.

The objects of the meeting having been explained by the chairman, the Hon. H. W. Hilliard made an address, and offered the following resolutions, which were adopted:

Resolved, That we respond with sincere satisfaction to the appeal made to the state of Alabama by the Governor of Louisiana, and other eminent gentlemen of that state, to co-operate in an effort to establish "A Great Agricultural and Mechanics' Exhibition and Fair of all Human Industry, upon a large and magnificent scale," to take place in May, 1853, in the city of New-Orleans, to be followed by annual fairs in the cities of Mobile, Natchez, and such other points as may favor such an enterprise.

Resolved, That the governor of this state be requested to appoint a delegation, con-

sisting of sixty gentlemen, chosen from different parts of Alabama, *to represent the State in the "Industrial Convention," to be held in New-Orleans, in April next.*

Resolved, That the Chairman of this meeting be requested to appoint fifteen gentlemen to act as a central committee, who shall hold their meetings in this city, and whose duty it shall be to correspond with persons throughout the state, interested in the success of substantial pursuits, with the view of preparing for a full participation, by the citizens of Alabama, in the proposed fairs at New-Orleans and elsewhere.

The Rev. Dr. Lipscomb was then called for, and addressed the meeting. Hon. J. E. Belser, by invitation, followed with a short address. Dr. Plough, agent from the State of Louisiana, to advance the interests of the exhibition, then addressed the meeting.

Hon. Mr. Davis, of Limestone, offered the following resolution:

Resolved, That this meeting has listened with great pleasure to the remarks of the Rev. Dr. Lipscomb, and that he be requested to furnish a written copy for pub lication. Adopted. The meeting then adjourned.

PRICE WILLIAMS, *Chairman.*
J. B. GLADNEY, *Secretary.*

3.—INSANE ASYLUM OF LOUISIANA.

We have received the third report of this institution, which has been in existence three years, and in that time admitted 202 patients, and discharged 124; 54 being restored to sound mind. The number of deaths is 49. The number at present treated, 78. The receipts of the institution, in two years, $26,845; disbursements, $24,922.

The whole number of insane and idiotic persons in the State of Louisiana, cannot, at present, be ascertained; but according to an official document recently received from the census office, at Washington City, the number of insane persons among the white and free colored population of the state, in 1850, was 289, classed in the following manner, viz:

Insane, white,		255
do. do. males,	153	
do. do. females,	102	
Total, white,	255	
Insane, free colored,		34
do. do. males,	19	
do. do. females,	15	
Total, free colored,	34	
Total, whites and free colored,		289

The above statement is exclusive of insane slaves, the precise number of whom we cannot at present state, having received no official returns of this class of persons; but, as the slave population of this state nearly equals that of the white and free colored, it would be reasonable to suppose that the insane, in both classes, would be also nearly equal. But it is a well known fact that insanity does not prevail to the same extent among the slave population, as that of the white and free colored. We will, therefore, deduct one-third from the supposed number of insane slaves, and the result will be as follows, viz:

Insane white and free colored,	289
Insane slaves,	192
Total insane persons in the State of Louisiana,	481

Our present buildings, at the utmost, affords accommodation for but eighty insane persons, thus leaving about 400 of these unfortunate creatures in the state without proper treatment, protection, or care.

4.—CATAHOULA PARISH, LOUISIANA.—CORRECTIONS.

J. D. B. DE BOW: Upon reflection I am fearful there are some errors in the "*boundaries*" of the parish, which are of such importance that I sincerely hope you will examine carefully and correct, and in order to do so I refer you to Latourette's map, which I have examined *since* writing. North is correctly stated—East, by Tensas and Black rivers, or Concordia parish—South, by Bayou and Lake Saline and Little River, or by Avoyelles and Rapides parishes—West, by Rapides and Natchitoches, or by Dugdemona River; but I refer you to the map.

In speaking of Harrisonburg I did not state that it was named by Harrison after himself.

In speaking of Trinity I omitted to mention that it was *incorporated* by an act of the *last* legislature, and that Joseph Guss was chosen first Mayor, or Chairman of the Town Council. Of the church in Trinity, the size should be 25 by 40 feet; cost, $700.

5.—ST. LOUIS MERCANTILE ASSOCIATION.

We thank the St. Louis Mercantile Association for the honor they have done us in these resolutions:

Resolved, That the Board of Directors of the St. Louis Mercantile Library Association appreciate the efforts of J. D. B. De Bow, Esq., of New-Orleans, in collecting, in his "Commercial Review," statistical in-

formation of great value to the South and West, and that we regard his journal as valuable to the merchants of St. Louis and New-Orleans, and cordially recommend it to their patronage.

Resolved, That the Corresponding Secretary is hereby instructed to forward a copy of these resolutions to Mr. De Bow, as a slight testimonial of our regard for his important labors, and our desire to promote the success of his useful journal.

GEO. R. ROBINSON,
Corresponding Secretary.

6.—CINCINNATI MERCANTILE LIBRARY, 1852.

James Lupton has been elected President; E. B. Hinman, Vice; H. D. Huntingdon and L. A. Ostrom, Secretaries; Charles R. Fosdick, Treasurer. The Directors are Mess. Chenowith, Woods, Merriam, Thompson and Caldwell. Mr. Fabian, the late Secretary, has removed to New-Orleans, and is mentioned in high terms by the Board. The receipts of this association are $7,779 01 for 1851, and the expenditures for books, lectures, and refitting rooms, $5,330 22. The library now contains 11,769 volumes. All praise is due to this worthy and estimable association.

7.—AGENCIES OF AGRICULTURE.

We are indebted to the Hon. Stephen A. Douglass for a copy of his admirable and comprehensive address upon the "Agencies of Agriculture," delivered before the State Agricultural Society of New-York. Mr. Douglass reviews the whole field of American agriculture in the spirit of a scholar and a patriot. We can only make a single extract, though it would be doing good service to our readers to insert the whole address, which is high-toned and liberal in its views:

"We are now able to furnish the whole world with the cheapest and best food, and with the cheapest and best raiment. We furnish grain, provisions and cotton—the three staple articles of commerce—in greater quantities and of better qualities, than any other nation; and the time is not far distant when we will be able also to regulate their prices. What a boundless field, then, is opened to our agricultural industry! What ample reward to the labor of our farmers! The command of the world-staples, even without the acquisition of California, (which secures to us the control of the precious metals,) must have given us the control of the commerce of the world. But independent of these international considerations, there is yet another which will naturally suggest itself to your minds. Our agricultural products, owing to the vast extent of our territory, and the great differences of soil and climate, are so varied, as to furnish abundant exchanges for the domestic trade between the different states of the Union. They furnish, in themselves, the materials of a very extensive internal commerce; employ, to a large extent, our coasting tonnage, and secure constant employment to our steamboats and rail-roads.

"Planting and farming are the mutual allies of each other, as are, indeed, all branches of agricultural industry, notwithstanding any prejudice which may be entertained in different sections of the country. They take a narrow view of political economy, who can see but rival interests growing out of the different productions of the same country; and they are worse than bigoted who, in consequence of it, indulge in unworthy jealousies or hostile sentiments towards brethren of the same family. You cannot, by legitimate means, benefit any one branch of industry of a great country, without indirectly benefiting all the rest; but when, as in the case before us, one interest is dependent on the other; when the producer of the one article is the best and often the only consumer of the other, who is so rash as to assert that the prosperity of the one works the injury of the other?"

8.—LATE PUBLICATIONS.

1.—*Hungary and Kossuth.* By Rev. B. F. Tefft, D. D. New-Orleans: John Ball, 1852.

This is a volume of about 400 pages, handsomely issued, and written with considerable vigor. It discusses the character and condition of the country, origin, and condition of the people, religion, language, and literature; Hungarian Constitution, external relations, attempts to overthow the Hungarian Nationality, the Austrian Revolution, Rebellion of the Sclaves, the Austrian Invasion, the Fall of Hungary, etc. Whilst European subjects are engrossing so much of popular attention, and whilst there is such a growing probability that we will eventually, whether we will it or not, be involved in European politics and quarrels, it is well for our people to begin their study. We never doubted that European intervention would one day or other become an American doctrine, though fervently desiring to postpone that day as long as possible. The arguments which are now urged for intervention are suicidal and absurd.

2.—*Essays on Interest, Exchange, Coins, Paper Money, and Banks.* By J. R. McCulloch, Esq., author of "The Commercial Dictionary." Philadelphia: Carey & Hart. New-Orleans: J. B. Steel.

The title of the volume, and its author's name, will speak sufficient for its contents. There are four parts: 1, on Interest and the effects of the Usury Laws; 2, on Foreign

and Domestic Exchange; 3, on Money, Coins, Bullion, Seignorage, Standard, etc.; 4, on Paper Money, and on Banks. The volume will be highly useful to every class of citizens.

3.—*Sixteen Months at the Gold-Diggings.* By Daniel Woods. New-York: Harper & Brothers. New-Orleans: J. C. Morgan.

This Mr. Woods would seem to have seen what is vulgarly called the "elephant," judging from the gloomy pictures he furnishes of California life and gold diggings. He gives a table of the earnings of 56 miners of his acquaintance laboring in the richest portions of the mines, and believes the general average for others to be much less:

Number of miners,	56
Length of time (working days),	121
Number of days' work,	6776
Whole amount made,	$22,089 76
Aggregate each day,	182 56
Average to each miner per day,	3 26

4.—*A Lady's Voyage Round the World;* translated from the German of Ida Pfeiffer; by Mrs. Percy Sinnett. Harper & Brothers. New-Orleans: J. C. Morgan.

Madame Pfeiffer tells us, in her introductory chapter, how it came about that a "lone woman," contrary to all the habits and usages of her sex, should have encouraged the fancy of visiting strange countries, and actually carried it out in a manner which would shame the sterner sex. In the first place, her birth-day was *in the last century*, which she regarded so far a protection. She says, "From my earliest childhood I had always the greatest longing to see the world. I read all books of travels I could get hold of. I traveled at last with my parents, and then with my husband. When my children's education was completed, I formed my resolution with a joy amounting to rapture. I set out alone on my journey to Palestine, and as I came home again in perfect safety, I trusted I had not acted presumptuously in following the impulses of my nature, and I determined to see a little more yet of the world."

5.—*Dream-Life:* A Fable of the Seasons. By Ik Marvel.

> "We are such stuff
> As dreams are made of; and our little life
> Is rounded with a sleep."

New-York: Charles Scribner. New-Orleans: John Ball. 1851.

The author, who is Donald G. Mitchell, of New-York, has dedicated his production to Washington Irving. Under the assumed name of Ik Marvel, he has contributed a class of very interesting fictions to the press, which have won for themselves a wide celebrity. The present work is divided into appropriate heads, to wit: Dreams of Boyhood; Dreams of Youth; Dreams of Manhood; Dreams of Age, &c. The style is chaste and simple. We can give but a single specimen on woman's love:

"That deep, thrilling voice, bearing all the perfume of the womanly soul in its flow, rarely finds utterance, and if uttered vainly—if called out by tempting devices, and by a trust that is abused—desolate indeed is the maiden heart—widowed of its chastest thought. The soul shrinks affrighted within itself. Like a tired bird lost at sea, fluttering around what seem friendly boughs, it stoops at length, and finding only cold, slippery spars, with no bloom, and no foliage—its last hope gone—it sinks to a wild ocean grave."

6.—*Report of the Society for the Relief of Destitute Orphan Boys.* 1851.

This is one of those blessed institutions which do so much to illustrate the heavenly impulses which are at the heart of man, let him do ever so much evil as he will in this world. It was established nearly twenty-eight years ago in New-Orleans, under the auspices of Beverly Chew and Judge Workmen. In that time, 866 destitute children have been taken care of. The number at present within the walls is 98. Only a small part of its support is derived from any fixed revenue, the rest resting entirely upon individual charities from year to year. Should not this prove a loud appeal to our citizens? Ten dollars constitute the donor a member of the Society; and fifty dollars a *life member*. We make a short extract from the report:

"The directors have the happiness to know, that there have been boys from this asylum who have reached the most honorable positions in society. We have one a respectable minister of the Gospel. Two have become distinguished navigators—one being the commander of one of the largest and finest packets between this city and France; the other is younger, but bids equally fair to become an ornament to his profession, and is now the second officer of a fine vessel. Another is a lawyer, and lately, by the confidence of his fellow citizens, has been elected, by a very flattering vote, a member of the state legislature, and has the happiness to be one of the present Directors of this Board. Others are respectable

merchants' clerks; and many adorning, by their industry and sagacity, a variety of the mechanical trades in our city; while others have been placed with honest farmers in the West, and from whom we have agreeable accounts. Some have grown up, have married, and become fathers of families."

7.—*The Southern Magazine.* Vol. I. No. 1. Mobile. 1852.

Reports of Alabama and Tennessee Rail-road Co.

Reports of James River and Kanawha Co. Rail-road.

The Southern Magazine is a new monthly, published in Mobile, and edited by Willis G. Clark, at the low price of $1 per annum. The print is neat and creditable to our sister; the original articles are as good, if not better, than those of the current literary magazines of the North of the same class. The editorial evinces intelligence and spirit. The work is purely literary, and as such assuredly deserves the support of the South-west. It is a happy improvement upon the one which was published last year in Mobile, and which seems early to have fulfilled its destiny.

The Rail-road reports, noticed above, will be referred to in the appropriate place in our future numbers.

8.—*Studies on Slavery.* By John Fletcher, A. M., of Louisiana.

We have seen some of the manuscripts of this work, which are written with great force and ability. It is proposed to publish them next winter in a volume of 600 pages, at $3 00. We have no doubt that the erudite author will be rewarded with a most liberal public patronage. Dr. Cartwright, of New-Orleans, thus gives his testimonial:

NEW-ORLEANS, Aug. 23, 1851.

I have read the manuscript you sent me containing Mr. Fletcher's first thirteen "Lessons on Slavery." To say that it is an able document, well written, and in the proper spirit, would be poor praise. I consider it immensely valuable, and that it ought to be read by every intelligent person North as well as South. * * * * *

I have long known Mr. Fletcher by sight, and have attended on him when sick; have often had casual conversations with him, and considered him a very learned man; but I must confess that I had formed, from a quarter of a century's acquaintance, no just conception of the extent of his erudition, and the remarkable powers of his mind, until I read the manuscript you sent me. * * *

The lessons will be doubly useful to the North, as they untie the knots and meshes of that web of sophistry which has entangled the intellectual and moral faculties of northern people, and made them the *slaves* of false doctrines, &c.

9.—BOOKS AND PERIODICALS.

1.—*Lectures on the History of France.* By the Right Honorable Sir James Steven, Professor of Modern History in the University of Cambridge, England. New-York: Harper & Brothers, 1852; J. C. Morgan, New-Orleans.

Sir James Stephen, being appointed to a chair in Cambridge, set about the preparation of these lectures, which are to be continued, and the subjects brought down to later date. The author tells us that he does not design to present the book as a compilation; that the plan of it, at least, is his own—that in the execution of that plan he has declined no labor, mental or bodily—that he has examined all the authorities, original and secondary, and diligently meditated every result to which his investigations appeared to lead. That he availed himself of the aid of the great authors of France, &c., &c. The volume embraces the Romano-Gallic history; the Merovingian and Carlovingian dynasties, the Crusades, the Monarchical System of France, the States General, the Revenues of the Kingdom, the Reformation, etc. Several lectures are devoted to the power of the pen in France, and to the monarchies of Henry IV. and Louis XIV. The work concludes with a comparison of the French and English monarchies.

2.—*Wesley and Methodism;* with a Portrait. Harper & Brothers; Morgan, New-Orleans.

"Until this book appeared," says the critic of Bell's Messenger, "it may be truly said that the life and character of the great apostle of Methodism had never been thoroughly analyzed, neither had the motives which led him to his course of action been dispassionately investigated. Mr. Taylor has anatomized both the founder of the society, and the society itself, with great talent and judgment."

3.—*Bankers' Magazine,* February, 1852. Price $5 00 per annum. J. Smith Homans, Boston.

Contents: I. Recent History of the Bank of France.

II. Fluctuations of the English Funds for the year 1851.

III. Fluctuations of the New-York Stock Market in 1851.

IV. Lawson's History of Banking. Chapter V.

V. Sketch of the Recent Progress of the Assurance of Life and Property on the Continent of Europe.

VI. Digest of the Decisions of the Supreme Court of New Hampshire upon Banking, Bills of Exchange, Promissory Notes, Usury, &c.

VII. Bank Correspondence. 1. Liabilities of Banks. 2. Notarial Forms. 3. Bank Exchanges in Philadelphia.

VIII. Suggestions for a New System of Bank Exchanges.

IX. Bank Statistics. 1. Alabama. 2. Indiana. 3. Michigan. 4. Massachusetts.

X. Miscellaneous.

XI. Bank Items; New Banks; New Appointments; Deaths of Bank Officers.

XII. Notes on the Money Market for January.

4.—*American Journal of Science and Art.* Conducted by Professors Silliman and Dana, aided by Dr. Wolcott Gibbs. New-Haven. $5 per annum. The publishers offer for sale of this valuable work the 1st series, 50 volumes; price, $100, (unbound); 2d series, 10 vols., price, $20.

5.—*Literary World.* New-York; $3 per annum. An admirable weekly journal, chronicling the literary movements of our own and all other countries, with the most sprightly criticisms, etc.

6.—*Norton's Literary Advertiser.* New-York; monthly. $1 per annum. This is the cheapest and the best guide to the literary man, in the purchase of books, which can be had in any quarter. Every work published in the United States, England, France, and Germany, is mentioned, with the name of the publisher. Among the notices of books, are monthly indexes of all the magazines published in this country or Europe. No scholar or reading man, or even amateur in books, should be without this cheap compendium.

7.—*Rail-Road Journal.* New-York; weekly. $5 per annum. Mr. Poor, the editor, is continually enlarging the sphere of usefulness of his work; and we hope it will extend wider and wider in the South and West, where we are most deficient in rail-road experience and information.

8.—*Southern Literary Gazette.* Weekly, with semi-monthly supplement. $3 per annum. Charleston: Walker, Richards & Co. An admirable family journal, which we hope is extending widely the area of its circulation.

9.—*The Soil of the South.* Columbus, Georgia. An instructive agricultural journal, which has reached the second number of the second volume.

10.—*Farmer and Planter.* Edited by Seaborn & Gilman, Pendleton, S. C. $1 per annum. This well conducted sheet deserves large patronage among southern planters.

11.—*Harper's Monthly Magazine.* $3 per annum. The February No. contains two beautifully illustrated papers upon Benjamin Franklin and Napoleon Bonaparte. The summary of Home and Foreign events, and the Editor's Table, are worth more than the whole subscription price.

12.—*Reports of the President, Directors, and Engineer of the Alabama and Tennessee Rail-Road Co.* 1851. This able report must bide its time until the matters of the late Convention are entirely disposed of by us.

CIRCULAR.

Paris, Jan. 10, 1852.

At a recent meeting of the American physicians in Paris, an association was established, whose object is the promotion of medical science.

This association, essentially national, is designated the *American Medical Society of Paris.* It is intended to be permanent in its nature, and is now progressing under the most favorable auspices. Notwithstanding the vast advantages afforded by the French metropolis for the study of medical and surgical science, we feel ourselves isolated from our national medical literature, and, therefore, confidently appeal to the conductors of American journals and periodicals.

We do this with the less hesitation, feeling assured that it will be not only a medium of improvement to ourselves, but a means of a more general diffusion, and just appreciation of American literature.

By order of the Society,

A. J. SEMMES, M. D.

Cor. Sec. of the Am. Med. Soc. in Paris.

SOUTH-WESTERN RAIL-ROAD CONVENTION.

The proceedings, reports, speeches, etc., of this important body, which we begun to publish in our last number, and have continued at length in this, will be finished next month. They will afterwards be published in pamphlet form. Our readers could not have placed before them more interesting material than is furnished in these papers, indicating, as they do, the course of opinion, and the future probable action of the whole south-western country. The able speeches

of Mr. Robb, of New-Orleans, and Mr. Burwell, of Virginia, were not furnished to us in time for the present number.

OUR JANUARY NUMBER, 1852.

Should the reprint of this number not have reached those of our subscribers who were not previously supplied, they will favor us a little longer, in the assurance that they will receive it long before the period for binding the volume, and in the further assurance that such a contingency shall not occur again.

We apologize for the want of variety in the papers in the present number, but pledge ourselves that the one for May will be the ablest, the largest, and the best ever issued from the office of the Review.

LATE PUBLICATIONS

Received at J. C. MORGAN'S New-Orleans Literary Depot, Exchange Place, adjoining the Post-Office.

Horsemanship—Including the breaking and training of horses. By Foucher. Illustrated.

The American Almanac for 1852.

Napoleon's Old Guard. By J. T. Headley, author of Napoleon and his Marshals, &c.

The Studies of Animals. Illustrated, for Lead Pencil and Crayon.

Heaven and the Sainted Dead. By Rev. H. Harbaugh.

No Such Word as Fail. A Juvenile Book. By Alice B. Neal.

Rules of Order. A Manual for Conducting Business in Deliberative Bodies. By B. Mathias.

Dream-Land by Daylight. By Caroline Chesebrough.

The Reveries of a Bachelor. By Ik Marvel. Elegant illustrated edition.

Knapp's Chemical Technology. Vol. 3, English edition.

Oregon—Its History, Condition, and Prospects. By Rev. Gustavus Hines.

The Lives of James Madison and James Monroe. By John Quincy Adams.

Science of Government, and Compend of the Constitutional and Civil Jurisprudence of the United States. By Andrew W. Young.

Gift Book for Young Men; or Familiar Letters on Self-Knowledge, Self-Education, Female Society, Marriage, &c. By Dr. William A. Alcott.

Gift Book for Young Ladies; or Familiar Letters on their Acquaintances, Male and Female.

Dream Life. A Fable of the Seasons. By Ik Marvel, author of Reveries of a Bachelor.

The Golden Legend. By Longfellow.

Florance, the Parish Orphan; and a Sketch of the Village in the last Century. By Eliza B. Lee.

Recollections of my Childhood, and other Stories. By Grace Greenwood.

The Wonder Book for Boys and Girls. By Nathaniel Hawthorne.

Tales from Catland. By an Old Tabby. With engravings.

Memoirs of a London Doll.

A Faggot of French Sticks. By Sir Francis Head.

Memoirs of the Great Metropolis, London, from the Tower to the Crystal Palace.

Woman in her various relations. By Mrs. L. G. Abell.

Nicaragua—Its People, Scenery, Monuments, and the proposed Interoceanic Canal. With numerous original maps and illustrations. By E. G. Squier.

Thirty Years with the Indian Tribes on the American Frontiers. By H. R. Schoolcraft.

Sixteen Months in the Gold Diggings. By Daniel B. Wood.

A Lady's Voyage Round the World. From the German of Ida Pfeiffer. By Mrs. Percy Sinnet.

Adrian; or the Clouds of the Mind. A romance By G. P. R. James, and Maunsell B. Field.

Sketches of Boston—Past and Present. With one hundred and twenty engravings.

A History of Classical Literature. By E. W. Brown.

Discourses on Scriptural Prophecy. By Dr. Turner.

The Practical Model Calculator. By Oliver Byrne.

Lectures on the History of France. By Sir J. Stephen.

Wesley, and Methodism. By Isaac Taylor.

The Odd Fellow's Text Book. An elucidation of the Theory of Odd Fellowship, embracing a detail of the System, in all its branches. By Paschal Donaldson, D. D., Grand Master of the R. W. Grand Lodge of Northern New-York.

NOVELS.

Fernley Manor; or Edith, the Inconstant. By Mrs. Mackenzie Daniel.

The Fortune Teller. By Eugene Sue.

Venetia Trelawney, the Sequel to Caroline of Brunswick. By Reynolds.

The Rifle Rangers. By Captain Mayne Reid.

Aims and Obstacles. By G. P. R. James.

The Tutor's Ward.

MAGAZINES.

Harper's Magazine for Jan. and Feb.		
International	do	do
Eclectic	do	do
Knickerbocker	do	do
Blackwood's	do	do
Merchant's	do	do
Graham's	do	do
Sartain's	do	do
Godey's Lady's Book		do

Appleton's Mechanics' Magazine for January and February.

London Art Journal for Jan. and Feb.

London Lancet for do.

Silliman's Journal of Sciences and Art, for Jan and Feb.

TEXAS—GENERAL AGENCY.

ESTABLISHED 1842, BY A. F. JAMES, CITY OF GALVESTON.

CAPITALISTS and others wishing to make investments, can always find at this office a list of improved and unimproved Real Estate for sale, consisting of building lots suitable for stores and private residences; also, cottages and desirable family residences in the city and suburbs.

Conveyancing, and all other instruments of writing, legal or commercial, carefully and neatly drawn on paper or on parchment.

Land Titles examined, and defective Titles perfected, when practicable. Title-papers, and other instruments, recorded in any of the record offices throughout the state.

Orders for the purchase or sale of slaves, or real estate, faithfully executed. Sugar and cotton plantations, and unimproved lands in various sections of the state, for sale. Claims against the Republic of Texas, and against private individuals, received for collection and prosecuted. The payment of taxes in all the counties of the state, carefully attended to; and property which may have been sold for taxes in the several counties, redeemed. Maps of all the principal counties, with the original surveys, are now preparing for this office; and abstracts of all original land titles granted by the states of Coahuila and Texas, and by the late Republic of Texas, can be examined at the General Agency Office.

The undersigned have known Mr. A. F. James, as a citizen of Galveston, for the last eleven years, during most of which time he has been engaged in the above business, for which we believe him well qualified, and recommend him to such as require the services of an Agent in Texas, as a gentleman in whom the fullest confidence may be reposed.

EDWARD HILL, *President*
Galveston Chamber of Commerce.
J. BATES, U. S. M.

M. B. MENARD, *President*
Galveston City Company.
JOHN C. WATROUS,
Judge of the Dist. Court of the U. S.

CARVER'S IMPROVED COTTON GINS.

G. BURKE & CO.

COTTON FACTORS AND GENERAL COMMISSION MERCHANTS, CHIEF AGENTS FOR THE SALE OF

E. CARVER & CO.'S

IMPROVED COTTON GINS.

☞ They have h and a large assortment of the usual sizes, No. 70 Magazine-street, opposite he *Canal Bank, New-Orleans.*

AGENTS:

Cobb & Manlove	Vicksburgh, Miss.	Titus & Co	Memphis, Tenn.
F. B. Ernest	Natchez, do.	Horton & Clark	Mobile, Ala.
Broughton & Murdock	Rodney, do.	Gilmor & Co	Montgomery, do.
T. McCrindall	Bayou Sara, La.		

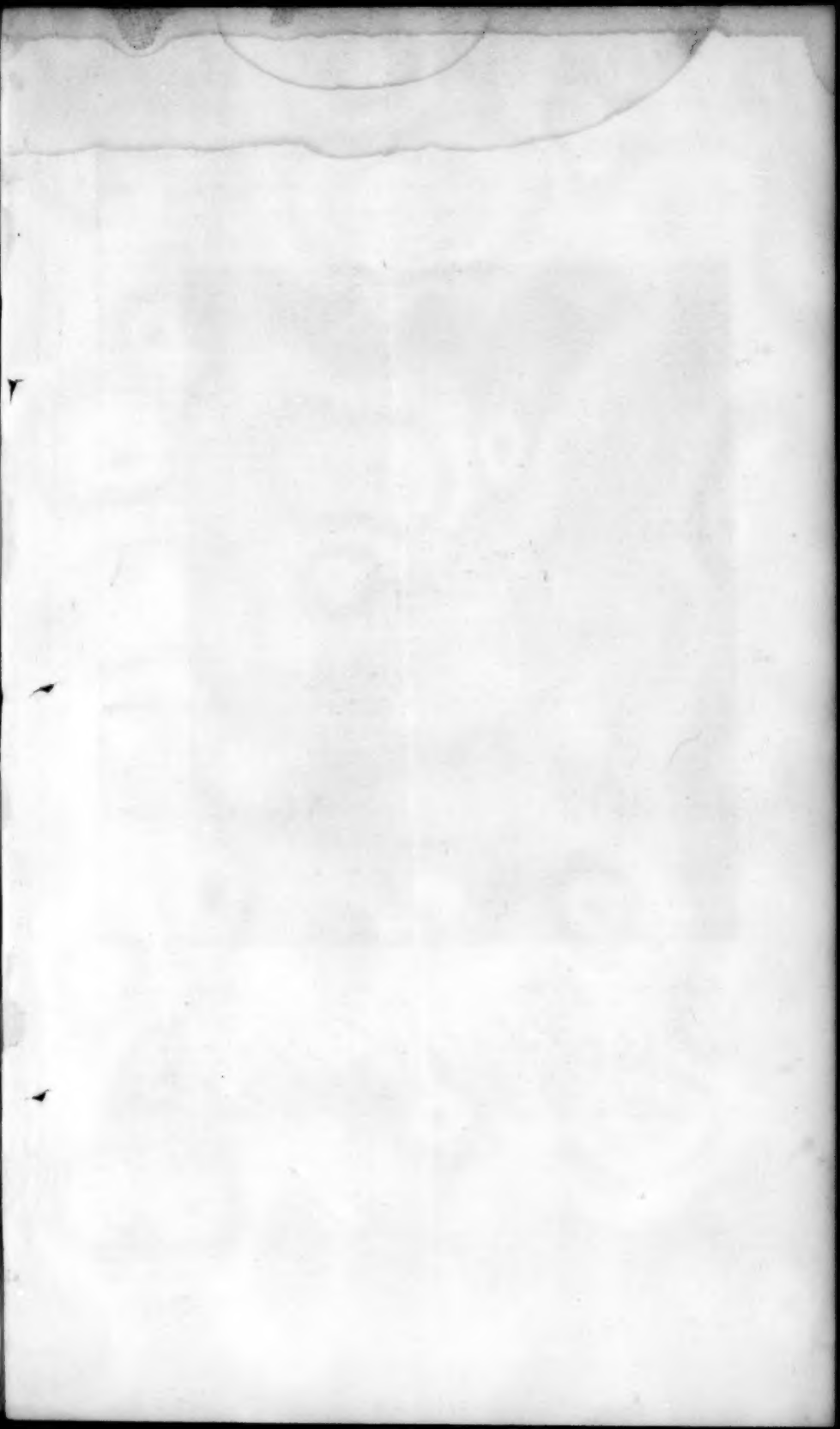
ABERDEEN FEMALE COLLEGE,

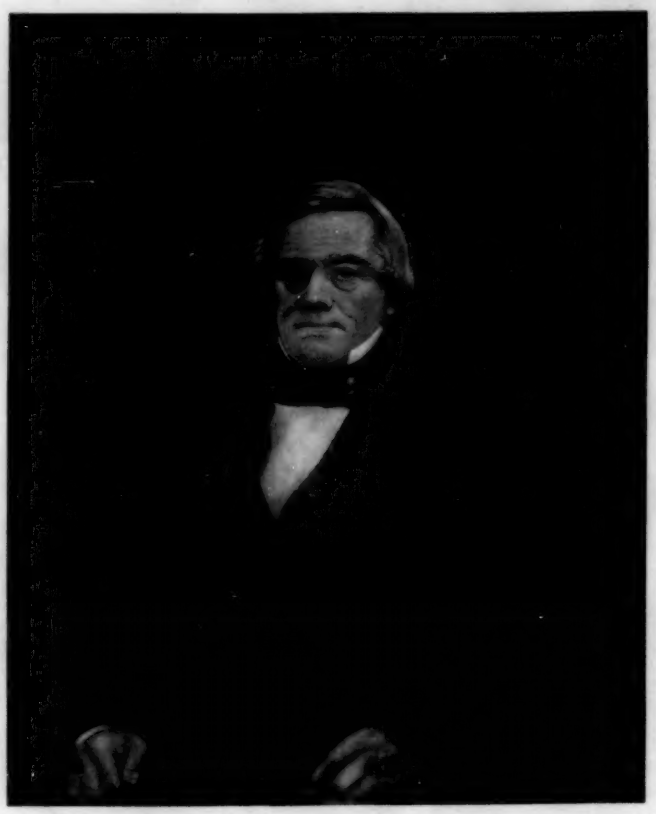
MISSISSIPPI.

THE Sessions of this Institution commence annually on Monday preceding the first Monday in October, and the annual Examinations take place the last week in July, continuing four days.

The course of instruction is a regular, collegiate course, and is as extensive and thorough as in any Female Institution, North or South. It has a regular and permanent faculty, ably sustaining every department. It is provided with an excellent Apparatus, and the course of Lectures and Experiments are equal to those in our best Male Colleges. In connection with the study of Physiology and Hygiene, physical training is conducted systematically; the only means by which symmetry of form and elegance of manners can be secured, and health promoted. The voice is cultivated upon the philsophical system of Dr. Rush. And it is believed that many years of health and happiness may be added to the life of those thus educated.

R. S. GLADNEY, President.





Yours truly
Robt. F. W. Allston

AGRICULTORIST OF SOUTH CAROLINA

Engraved by Illman & Sons, expressly for De Bow's Review, New Orleans.

No 17

Printed by J. M. Buller

Gallery of Industry & Enterprise.